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智慧財產局專利公報檢索系統—檢索結果

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申請專利範圍：

1.一種符號猜測遊戲裝置，其特徵為，具備：

從事先所定的多數個符號中隨機地且陸續地選擇符號之符號選擇裝置，

和把前述多數個符號，分別對應於所定個數的下賭對象中之任何者的符號對應裝置，

和把由遊戲者所下賭之遊戲投幣值對應於其中任何的下賭對象領域之遊戲投幣值對應裝置，

和關於前述各下賭對象領域分別設定付還率之付還率設定裝置，

和每由前述符號選擇裝置選擇符號，判定對應於所選擇符號的下賭對象領域是否前述遊戲投幣值有對應之判定裝置，

和由該判定裝置，判定為前述遊戲投幣值已對應於前述所選擇的符號所對應之前述下賭對象領域時，把對應於該下賭對象領域的遊戲投幣值之總量，及關於該下賭對象領域所設定的對應付還率之量的遊戲投幣值，分紅給遊戲者之分紅裝置，

及由該分紅裝置進行分紅後，對前述付還率設定裝置，使關於對應前述所選擇的前述下賭對象領域之付還率率動的付還率變動裝置，

之符號猜測遊戲裝置。

2.如申請專利範圍第1項之符號猜測遊戲裝置，其中，前述符號對應裝置，將對各下賭對象領域，分別使多數個之符號對應。

3.如申請專利範圍第1項之符號猜測遊戲裝置，其中，前述遊戲投幣值對應裝置，將把前述由遊戲者所下賭的遊戲投幣值，分在多數的下賭對象領域使之對應。

4.如申請專利範圍第1項之符號猜測遊戲裝置，其中，前述付還率設定裝置，將依對應於遊戲投幣值的下賭對象領域之總數而變動前述付還率。

5.如申請專利範圍第4項之符號猜測遊戲裝置，其中，前述付還率設定裝置，使對應於遊戲投幣值的下賭對象領域之總數愈多時，前述付還率愈大。

CLAIMS

[Claim(s)]

[Claim 1] Bingo game equipment characterized by providing the following. A sign selection means to choose a sign from from at random and one after another among two or more signs defined beforehand. in every direction -- a display means to display the matrix which consists of two or more masses, respectively An effective field setting means to set up the part or all the fields in this matrix as an effective field. at least -- each mass in the aforementioned effective field -- the account of before -- with a sign setting means to set up, respectively any of two or more signs defined beforehand they are A play value receptionist means to receive bet **** play value by the play person, An effective field expansion means to expand the effective field set up by the aforementioned effective field setting means according to the amount of the play value received by this play value receptionist means, A hit mass specification means to hit and to specify as a mass the mass to which the sign corresponding to the sign chosen by the aforementioned sign selection means is set, A judgment means to judge [as which it was specified by this hit mass specification means] whether it hits and the mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, a dividend means to pay play value to the aforementioned play person when judged with the mass continuing in which direction of [on the aforementioned matrix] more than the predetermined individual per above by this judgment means -- ** .

[Claim 2] The aforementioned effective field expansion means is bingo game equipment according to claim 1 characterized by expanding the aforementioned effective field at a time by one mass.

[Claim 3] The aforementioned effective field expansion means is bingo game equipment according to claim 1 characterized by expanding the aforementioned effective field to lengthwise and a longitudinal direction.

[Claim 4] The aforementioned effective field expansion means is bingo game equipment according to claim 1 characterized by to expand the aforementioned effective field at a time by one mass when the amount of the play value received by the aforementioned play value receptionist means is below constant value, and to expand the aforementioned effective field to lengthwise and a longitudinal direction when the amount of the play value received by the aforementioned play value receptionist means exceeds constant value.

[Claim 5] The aforementioned dividend means is bingo game equipment according to claim 1 characterized by paying play worth of the amount reflecting the number of continuation to a play person according to the number of continuation of the mass specified by the mass specification means per above.

[Claim 6] A mass setting means for a bonus to set up any in the aforementioned matrix, or two or more masses as a bonus object, It has further a 2nd judgment means to judge whether it is specified by the mass specification means per above while being contained to the effective field. all the masses set up as a bonus object -- the above -- all the masses to which the aforementioned dividend means was set as a bonus object by the aforementioned 2nd judgment means -- the above, when it is judged with being specified by the mass specification means per above, while being contained to the effective field Bingo game equipment according to claim 1 characterized by increasing the play value paid to the aforementioned play person.

[Claim 7] Bingo game equipment according to claim 1 characterized by having further a storage means to hold the information corresponding to whether whether the display

position of the mass, the sign set as the mass, and its mass hitting about all the masses in the aforementioned matrix, and it being specified as a mass and its mass are contained to the effective field.

[Claim 8] Bingo game equipment according to claim 6 characterized by having further a storage means to hold the information corresponding to whether whether the display position of the mass, the sign set as the mass, and its mass hit about all the masses in the aforementioned matrix, and it is specified as a mass, whether the mass's being contained to the effective field, and its mass are set up as a bonus object.

[Claim 9] The matrix which consists of two or more masses, respectively is displayed on the aforementioned display. in every direction to the computer connected to the sign selecting arrangement and display which choose a sign from from at random and one after another among two or more signs defined beforehand -- The part or all the fields in this matrix are made to set up as an effective field. It is made to set up, respectively any of two or more signs defined beforehand they are. at least -- each mass in the aforementioned effective field -- the account of before -- The aforementioned effective field is made to expand according to the amount of bet **** play value by the play person. Hit and the mass to which the sign corresponding to the sign chosen by the aforementioned sign selecting arrangement is set is made to specify as a mass. The computer-readable medium which stored the program which makes a play person pay play value when this hit mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual.

[Claim 10] Bingo game equipment characterized by providing the following. A sign selection means to choose a sign from from at random and one after another among two or more signs defined beforehand. in every direction -- an effective field setting means to set up the part or all the fields in the matrix which consists of two or more masses, respectively as an effective field at least -- each mass in the aforementioned effective field -- the account of before -- a sign setting means to set up, respectively any of two or more signs defined beforehand they are An effective field expansion means to expand the effective field set up by the play person by the aforementioned effective field setting means according to the amount of bet **** play value, A hit mass specification means to hit and to specify as a mass the mass to which the sign corresponding to the sign chosen by the aforementioned sign selection means is set, A judgment means to judge [as which it was specified by this hit mass specification means] whether it hits and the mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, a dividend means to pay play value to the aforementioned play person when judged with the mass continuing in which direction of [on the aforementioned matrix] more than the predetermined individual per above by this judgment means -- ** .

[Claim 11] The part or all the fields in the matrix which consists of two or more masses, respectively are made to set up as an effective field. in every direction to a computer -- It is made to set up, respectively any of two or more signs beforehand set to each mass in the aforementioned effective field at least they are. The aforementioned effective field is made to expand according to the amount of bet **** play value by the play person. Hit and the mass to which the sign chosen at random [from] among two or more aforementioned signs is set is made to specify as a mass. The computer-readable medium which stored the program which makes a play person pay play value when this hit mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the computer-readable medium which stored the bingo game equipment and the bingo game program which make it compete for whether chose the numeric value at random and one after another from the numeric values of the predetermined range, and all the numeric values in which numerical train which constitutes the numerical matrix in the card information beforehand given to the play person were chosen.

[0002]

[Description of the Prior Art] A bingo game is a game performed in the European and American casino for many years. Here, if the rule is explained briefly, each play person will purchase the card with which the number random in the shape of [of 5x5] a matrix was put in order, and will participate in a game. And out of the ball extractor which has held two or more balls with which the original number was drawn respectively, a dealer extracts a ball at random and one after another, and reads out the number currently drawn on the front face of the extracted ball. Each play person will check the number, if the read-out number is indicated on the self card. Thus, a check of all of which five numbers located in a line in length, width, or the direction of slant on a card forms "bingo" (the state in front of bingo is called "reach"). And the play person who formed "bingo" receives a dividend in all the beginnings in a participant from a dealer as a victor.

[0003] By the way, in recent years, the bingo game equipment to which hang coin and a bingo game is made to perform automatically by computer control as an object is known. In such bingo game equipment, with the numerical-selection equipment of which composition, numeric data is chosen from the inside of the numeric value of the fixed range at random, and it transmits to the station where each play person has taken the seat. Each station generates the card data equivalent to the number matrix on an original card, and displays the picture of a card based on this card data on a display unit. And while checking this content of data based on the numerical information notified from numerical selecting arrangement, the card picture on a display unit is changed. And when it judges automatically whether bingo was materialized or not and bingo is materialized, the coin of the number corresponding to the coin thrown in at the time of a game start is paid to a play person.

[0004]

[Problem(s) to be Solved by the Invention] However, the conventional bingo game equipment mentioned above could not but be only what only performs a game automatically along with the rule of a traditional bingo game. That is, it was fixed to the size of 5x5, I did the size of the number matrix in the card data set as the station which each play person occupies, and the number of sheets (bed) of the coin in which the dividend when a play person wins was also supplied at most at the time of a game start was reflected. Thus, it could not say that the conventional bingo game had employed efficiently the special feature of control by the computer which can perform colorful and high-speed processing, and the high content of a game of the play nature of paying back in a colorful mode according to a play person's decision and fate was not able to be offered.

[0005] Then, the technical problem of this invention is offering the computer-readable medium which stored the bingo game equipment and the bingo game program to which the probability changing the size of the effective field in the matrix displayed on the display means according to the amount of the play value by which the bed's was carried out in view of the above problem, and bingo's being materialized by it can be made to

increase.

[0006]

[Means for Solving the Problem] Invention given [each] in a claim is made in order to solve the above-mentioned technical problem.

[0007] A sign selection means to choose a sign from from at random and one after another among two or more signs as which invention according to claim 1 was determined beforehand, in every direction -- with a display means to display the matrix which consists of two or more masses, respectively, and an effective field setting means to set up the part or all the fields in this matrix as an effective field at least -- each mass in the aforementioned effective field -- the account of before -- with a sign setting means to set up, respectively any of two or more signs defined beforehand they are A play value receptionist means to receive bet **** play value by the play person, An effective field expansion means to expand the effective field set up by the aforementioned effective field setting means according to the amount of the play value received by this play value receptionist means, A hit mass specification means to hit and to specify as a mass the mass to which the sign corresponding to the sign chosen by the aforementioned sign selection means is set, A judgment means to judge [as which it was specified by this hit mass specification means] whether it hits and the mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, When judged with the mass continuing in which direction of [on the aforementioned matrix] more than the predetermined individual per above by this judgment means, it is characterized by equipping the aforementioned play person with a dividend means to pay play value.

[0008] According to invention according to claim 1, a sign selection means chooses a sign from from at random and one after another among two or more signs defined beforehand. on the other hand, a display means is in every direction -- the matrix which consists of two or more masses, respectively is displayed moreover, an effective field setting means -- the part or all the fields in this matrix -- as an effective field -- setting up -- a sign setting means -- at least -- each mass in the aforementioned effective field -- the account of before -- it sets up, respectively any of two or more signs defined beforehand they are And if a play person risks play value, a play value receptionist means will receive bet **** play value by the play person. Then, an effective field expansion means expands the effective field set up by the aforementioned effective field setting means according to the amount of the play value received by the play value receptionist means. Thus, if a setup of an effective field is completed, a hit mass specification means hits the mass to which the sign corresponding to the sign chosen by the sign selection means is set, and is specified as a mass. If specification of such a hit mass is repeated, a judgment means will judge [as which it was specified by the hit mass specification means] whether it hits and the mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual. And when judged with hitting by this judgment means and the mass continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, a dividend means pays play value to a play person. Thus, since the probability that bingo will be materialized according to the amount of the play value risked by the play person increases, according to a play person's decision and fate, it can pay back in a colorful mode.

[0009] The effective field expansion means of a claim 1 is expanding the aforementioned effective field at a time by one mass, and specifies invention according to claim 2.

[0010] The effective field expansion means of a claim 1 is expanding the aforementioned effective field to lengthwise and a longitudinal direction, and specifies invention according to claim 3.

[0011] When the amount of the play value which expanded the aforementioned effective

field at a time by one mass, and was received by the aforementioned play value receptionist means when the amount of the play value that the effective field expansion means of a claim 1 was received by the aforementioned play value receptionist means was below constant value exceeds constant value, invention according to claim 4 is expanding the aforementioned effective field to lengthwise and a longitudinal direction, and is specified.

[0012] Invention according to claim 5 is paying the play worth of an amount the dividend means of a claim 1 having reflected the number of continuation according to the number of continuation of the mass specified by the mass specification means per above, to a play person, and is specified.

[0013] A mass setting means for a bonus by which invention according to claim 6 sets up any in a matrix, or two or more masses as a bonus object in a claim 1, all the masses set up as a bonus object -- the above -- by having further a 2nd judgment means to judge whether it is specified by the mass specification means per above, and the aforementioned 2nd judgment means, while being contained to the effective field all the masses set up as a bonus object -- the above -- while being contained to the effective field, when it is judged with being specified by the mass specification means per above, it specifies by increasing the play value which a dividend means pays to the aforementioned play person

[0014] The display position of the mass, the sign set as the mass, and its mass hit about all the masses in the matrix of a claim 1, and invention according to claim 7 is having had further, and specifies a storage means to hold the information corresponding to whether whether it being specified as a mass and its mass are contained to the effective field.

[0015] The display position of the mass, the sign set as the mass, and its mass hit about all the masses in the matrix of a claim 6, and invention according to claim 8 is having had further, and specifies a storage means to hold the information corresponding to whether whether it is specified as a mass, whether the mass's being contained to the effective field, and its mass are set up as a bonus object.

[0016] As opposed to the computer connected to the sign selecting arrangement and display which choose a sign from from at random and one after another among two or more signs as which invention according to claim 9 was determined beforehand The matrix which consists of two or more masses, respectively is displayed on the aforementioned display. in every direction -- The part or all the fields in this matrix are made to set up as an effective field. It is made to set up, respectively any of two or more signs defined beforehand they are. at least -- each mass in the aforementioned effective field -- the account of before -- The aforementioned effective field is made to expand according to the amount of bet **** play value by the play person. Hit and the mass to which the sign corresponding to the sign chosen by the aforementioned sign selecting arrangement is set is made to specify as a mass. When this hit mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, it is the computer-readable medium which stored the program which makes a play person pay play value.

[0017] A sign selection means to choose a sign from from at random and one after another among two or more signs as which invention according to claim 10 was determined beforehand, in every direction -- with an effective field setting means to set up the part or all the fields in the matrix which consists of two or more masses, respectively as an effective field at least -- each mass in the aforementioned effective field -- the account of before -- with a sign setting means to set up, respectively any of two or more signs defined beforehand they are An effective field expansion means to expand the effective field set up by the play person by the aforementioned effective field setting means according to the amount of bet **** play value, A hit mass specification

means to hit and to specify as a mass the mass to which the sign corresponding to the sign chosen by the aforementioned sign selection means is set, A judgment means to judge [as which it was specified by this hit mass specification means] whether it hits and the mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, When judged with the mass continuing in which direction of [on the aforementioned matrix] more than the predetermined individual per above by this judgment means, it is characterized by equipping the aforementioned play person with a dividend means to pay play value, and **.

[0018] The part or all the fields in the matrix which consists of two or more masses, respectively are made to set up as an effective field. invention according to claim 11 is in every direction to a computer -- It is made to set up, respectively any of two or more signs beforehand set to each mass in the aforementioned effective field at least they are. The aforementioned effective field is made to expand according to the amount of bet **** play value by the play person. Hit and the mass to which the sign chosen at random [from] among two or more aforementioned signs is set is made to specify as a mass. When this hit mass is continuing in which direction of [on the aforementioned matrix] more than the predetermined individual, it is the computer-readable medium which stored the program which makes a play person pay play value.

[0019]

[Embodiments of the Invention]

[0020]

[Operation gestalt 1] Hereafter, based on a drawing, the gestalt of operation of the 1st of this invention is explained.

[0021] The game equipment 1 shown in drawing 1 applies the bingo game equipment by the invention in this application, and has the ball 2 of plurality (usually 25 pieces) to the central part space. These balls 2 are agitated in this building envelope, and only the piece of them is extracted at random. Since data carrier 2a (Vby OMRON Corp.600- D23 P refer to 66 and drawing 26) which is the IC card which stored in these balls 2 original number data (sign) which are mutually different, respectively is stored, game equipment 1 reads this number data, and distributes it to each station 5. Each station 5 is performing the bingo game program, respectively, and it repays the coin of the number which becomes settled according to predetermined conditions to a play person noting that it is the victory of the play person who has participated in the game by throwing in coin, when the combination of the number data distributed one after another becomes a fixed pattern.

[0022] The machine configuration of game equipment 1 is explained in detail below <the machine configuration of game equipment>.

[0023] So that drawing 1 which shows the front view of this game equipment 1 may show game equipment 1 The main part 3 as sign selecting arrangement (a sign selection means to choose a sign from from at random and one after another among two or more signs defined beforehand) which performs the selection process of a ball in the building envelope, Six sets of the stations 5 which enclose the lower part section of a main part 3 at intervals of angles [radial], and six spacers 4 with which between each station 5 [both] is fill uped are considered as basic composition.

[0024] (Station 5) A play person takes a seat and each station 5 can participate now in a game, respectively. At each station 5, since the game program (bingo game program) is performed uniquely, respectively, a game (bingo game) can be gone on independently with the content of a game currently performed at other stations 5.

[0025] As shown in drawing 3 and drawing 25 , in the left-hand side of the upper surface of each station 5, display 5m (display, display means) which consists of LCD (LIQUID CRYSTAL DISPLAY) for displaying the result of the advance situation of a game or victory or defeat is embedded. Moreover, pay out button 5a-2 for help button 5a-1 and

the repayment demand of coin are prepared in this right-hand side back lining up side-by-side, and 5t of coin slots for key-switch 5k throwing coin into the bottom of key-switch 5k again is arranged under these two buttons. Moreover, four button 5b (the A button, the B button, the C button, the D button) for inputting various operator guidance with game advance is arranged in this right-hand side this side. A function is given to each [these] button 5b by the game program performed at a station 5, respectively. this operation gestalt -- setting -- a bingo game program -- the A button -- the function as a game select button -- the function as a game button is given to the C button, and the function as a bed button is given to the D button for the function as a bed select button at the B button, respectively Moreover, exhaust port 5p for discharging the coin repaid from the coin acceptance machine 151 (refer to drawing 27) built in this station 5 is formed in the center of a front face of each station 5.

[0026] Drawing 5 which is drawing of longitudinal section which met drawing 4 which is drawing of longitudinal section which met drawing 3 which is the cross-sectional view which met drawing 2 which is the side elevation seen from the direction of the arrow II in drawing 1 , drawing 1 , and the III-III line of drawing 2 , drawing 2 , and the IV-IV line of drawing 3 , drawing 3 , and the V-V line of drawing 4 , (Main part 3) As shown in drawing 10 which is drawing 7 which is drawing of longitudinal section which met the VII-VII line in drawing 6 and drawing 6 which are drawing of longitudinal section which met this VI-VI line, and drawing of longitudinal section which met the X-X line in drawing 6 Hexagon-head cylinder part material 3a which a main part 3 becomes from the transparent acrylic surrounding the game space specified to the interior, The ball extractor style built in the game space inside this hexagon-head cylinder part material 3a, Two lifts 15 formed at intervals of the angle of 180 degrees so that this hexagon-head cylinder part material 3a might be inserted, While supporting by support 3b prepared two [at a time] at intervals of angles [between / each lift 15], and each lift 15 and each strut 3b, the upper limit of hexagon-head cylinder part material 3a consists of wrap top-plate section 3c and 3d of pedestals supporting these each part material.

[0027] The outline of an above-mentioned ball extractor style is described.

[0028] The ball 9 as the ball fall section for dropping a ball 2 serially is arranged at the upper part of game space. Moreover, the ball extractor 11 which extracts one ball 2 from from among two or more balls 2 which have fallen from the ball 9 is arranged at the pars intermedia of game space. Moreover, the bottom plate (*****) 13 fabricated by the configuration which can store in the upper surface the ball 2 which has fallen directly in the lower part of game space, without passing through the ball extractor 11 from a ball 9, and the ball 2 which has gone via the ball extractor 11 is arranged. Moreover, in order that the reader 17 which projected in the shape of a truncated cone, and was formed may read the ball number of the ball 2 extracted by the ball extractor 11 as if it upheaved towards directly under [of the ball extractor 11], it is prepared in the center of this ***** 13. In addition, the outside lane 18 as second ball path object is formed in the upper limit of a reader 17.

[0029] On the other hand, the above-mentioned lift 15 conveys the ball 2 which has collected on ***** 13 even to a ball 9 along the periphery side of hexagon-head cylinder part material 3a as a ball conveyance means.

[0030] By the above composition, two or more balls 2 held in the game space in hexagon-head cylinder part material 3a circulate through the inside and outside of game space so that it may get down from the upper part (height) of game space from pars intermedia to the lower part (low place) to pars intermedia and may return from the lower part to the upper part as a game advances. And if the ball 2 which circulates through the inside and outside of game space is extracted by the ball extractor 11, the extracted ball 2 will be caught by the outside lane 18, and will be led to a reader 17. Thus, the ball 2 led to the reader 17 goes to ***** 13, after the ball number is read by

this reader 17. After that, like previous statement, by the lift 15, it is again sent to a ball 9 and circulates like other balls 2.

[0031] Hereafter, the concrete structure of these composition is explained in detail.

[0032] [Ball 9] A ball 9 has a flat bowl type disk-like configuration, and the inside is making a part of spherical surface. This ball 9 is being fixed to top-plate 3c of a main part 3 through 9l. of two or more feet. The ball 9 consists of transparent plastics so that the movement of a ball 2 which entered into it may be visible to a play person from the exterior. And falling a ball 2 is kept at the pars basilaris ossis occipitalis of this ball 9, and 9h of holes is dug (references, such as drawing 10). For this reason, a ball 9 functions as the ball fall section.

[0033] Moreover, as shown in drawing 11 (B) especially among drawing 11 , to the adjoining lift 15 and 15, ball move directional-control board 9b and 9b for it letting them pass in accordance with the inside of a ball 9, as the ball 2 conveyed by the lift 15 draws radii, and making it result in 9h of holes are aslant turned to the inside of a ball 9, and is prepared in it. This ball move directional-control board 9b is being fixed in the state where it hung from top-plate 3c. In addition, inside, the nose of cam (soffit) of ball move directional-control board 9b did not contact the inside of a ball 9, but it is slightly separated from it. In addition, although drawing 11 (B) showed as what has arranged each ball move directional-control board 9b so that those opposite sides nine b1 may become parallel, one ball move directional-control board 9b may be installed in drawing 11 (B), as the two-dot chain line showed.

[0034] Moreover, the propeller-like guidance implement 19 is formed through the stay which hung and let it pass from top-plate 3c of a main part 3 just under the ball 9, and penetrated 9h of holes (references, such as drawing 1 - drawing 7). The guidance implement 19 is a member which changes at random the orbit of the ball 2 which hits this, and makes about 3 - 40 percent of the ball 2 hold in the celestial sphere 24 of the ball extractor 11. and through [of a ball 9] -- through [among all the fall orbits that the ball 2 which falls from 9h of holes can take / its] -- the fall orbit which drops a ball 2 in the range of a certain grade centering on the point [directly under] which is 9h of holes is equivalent to "a specific fall orbit" And the ball extractor 11 mentioned above in this specific fall orbit and the celestial sphere 24 which is the component of **** especially are arranged.

[0035] [Ball extractor 11] The celestial-sphere section containing the celestial sphere 24 for the ball extractor 11 receiving the ball 2 which fell from the ball 9 by predetermined probability, The inner lane 21 (the below-mentioned piece 39 of a guide as the prehension section is included) as first ball path object for returning to ***** 13 which eliminated the ball 2 which was not extracted while extracting one ball 2 out of the ball 2 received by the celestial sphere 24, and was finally mentioned above, The inclination mechanical component which rocks or (inclination) turns the celestial sphere 24 is considered as basic composition. Hereafter, the detailed composition of these celestial-sphere section, the inner lane 21, and an inclination mechanical component is explained.

[0036] A ball 9 lets the [celestial-sphere section] celestial-sphere section pass, and it is arranged directly under 9h of holes so that the ball 2 which has fallen from the ball 9 can be received. And the celestial sphere 24 as a ball attaching part which is the container of the shape of a dome in which the inside carried out opening to the upper part (upper part in the state which shows in drawing 1) which succeeds in the spherical surface, The hanging section 25-25 (refer to drawing 1 - drawing 7 , and drawing 10) by which each end section was fixed to the part of the couple estranged 180 degrees to mutual [in the periphery of opening marginal 24e of the celestial sphere 24], It consists of balancer 22w prepared in the above-mentioned other end in the bearing support 29-29 and the hanging section 25-25 for supporting free [rotation of the ends of the

shaft 27 fixed by penetrating near the other end of each hanging section 25-25, and a shaft 27].

[0037] The celestial sphere 24 is the flat bowl type disk-like member formed from transparent plastics, as the movement of a ball 2 looks being the same as that of a ball 9 from outside, and it makes the inside 24i the spherical surface. The center of curvature C of inside 24i of this celestial sphere 24 is in agreement with the axial center in the center of a longitudinal direction of a shaft 27. Moreover, two or more salients 37 are formed around pole 24p in the inside 24 of the celestial sphere 24 (refer to drawing 22). Salient 37 raises a churning operation of the ball 2 held in the celestial sphere 24. Moreover, when it is in the initial valve position (zero) which the celestial sphere 24 indicates to be 24p to drawing 1 very much and the line of imagination is hung from center of curvature C, the line is the thing of a point which crosses the celestial sphere 24, and if it puts in another way, the part deep No. 1 in case the celestial sphere 24 is in a level state will be said.

[0038] Balancer 22w is the weight formed in the hanging section 25 through the arm 22w1 (refer to drawing 5 and drawing 6), and it sets up a little more lightly whether the weight which doubled two balancers 22w (each arm 22w1 is included) is the same as the weight adding the celestial sphere 24 and the inner lane 21. In case rocking etc. carries out the celestial sphere 24 by arranging balancer 22w, the below-mentioned drive motor 31 and the burden of a driving belt 33 can be reduced.

[0039] The drive motor 31 with which the [inclination mechanical-component] inclination mechanical component was prepared near the base of the support 29 of the right-hand side in drawing 4 , The driving belt 33 over which it was built in the support 29 of this right-hand side between 31s of axes of rotation of the celestial-sphere drive motor 31, and the shaft 27, It consists of encoders 35 for being prepared in the inside near the upper-limit section of the support 29 of the left-hand side in drawing 4 , and detecting the angle of rotation of a shaft 27, i.e., the position of the celestial sphere 24.

[0040] By this inclination mechanical component 22, the celestial sphere 24 is rocked by both the hands of cut centering on a shaft 27 by fixed angle within the limits from the home position shown in drawing 1 (inclination), or the portion which is near the marginal 24e of the celestial sphere 24 among inside 24i of the celestial sphere 24 inclines further, and is made to make one revolution rather than a level position according to predetermined timing, or it is returned to an initial valve position. The position (tilt angle) of the celestial sphere 24 is always detected by the encoder 35 in the process of such a series of rocking.

[0041] The lane 21 within [the inside lane 21] eliminates the other ball 2 while catching only one of two or more balls 2 which began to roll toward the opening marginal 24e with the aforementioned rotation of the celestial sphere 24. This inner lane 21 is formed as a ball path object (first ball path object) (21s, 21r, 21p) which lets a part for a ball piece pass.

[0042] As shown in drawing 1 - drawing 7 , drawing 9 , drawing 10 , and drawing 22 that is an important section perspective diagram, the two aforementioned center of curvatures C are attached in the inner lane 21 to the shaft 27 as the middle point of a point symmetry. An end is fixed to the aforementioned center of curvature C on a shaft 27, and each ** lane 21 is turned in the direction of a path. to a radial And and three coupling rod 21 s.21 s.21s prolonged at the same aperture angle alpha (refer to drawing 5), Piece of ring of three sheets 21r, 21r, and 21r which is located on the extension wire of the coupling rod 21 s.21 s.21s concerned in the state where it was fixed to the other end of these coupling rod 21 s.21 s.21s, and has a still larger bore a little than the diameter of a ball 2, It consists of three knee pillar 21p, 21p, and 21p for connecting these three same hoop-direction positions of piece of ring 21r, 21r, and 21r. One in this three knee pillar 21p, 21p, and 21p (this knee pillar 21p is called "knee pillar 21P" for

convenience below.) The positions which are most separated from the shaft 27 in piece of each ring 21r, 21r, and 21r were connected, and other two have connected the positions estranged 90 degrees from these deflection pillar 21P in piece of each ring 21r, 21r, and 21r. Each of these three knee pillar 21p, 21p, and 21p (21P) are making the center of curvature in agreement with the center of curvature C of inside 24i of the celestial sphere 24.

[0043] According to the above structure, the inner lane 21 divides the ball path s (refer to drawing 22) as a building envelope of ends opening which lets a part for the ball piece formed of knee pillar 21p, 21p, and 21p (21P) pass. This ball path s is prolonged along with knee pillar 21P as a toxa most located in the direction outside of a path among its knee pillar 21p, 21p, and 21p (21P). These knee pillar 21P are inside 24i (refer to drawing 3 and drawing 4) of the celestial sphere 24, and this heart, and are the same as the radius of curvature of the celestial sphere 24, or have radius of curvature of the same grade. therefore, the inner lane 21 -- the extension top of the inner skin of the celestial sphere 24 -- and -- while being arranged in the rocking direction of the celestial sphere 24 -- the extension wire top of knee pillar 21P -- the aforementioned celestial sphere -- it can be said that 24p is located very much

[0044] In addition, piece of ring 21r which adjoins the celestial sphere 24 among piece of ring 21r, 21r, and 21r is stopped by the celestial sphere 24 on the screw which is not illustrated. Therefore, the inner lane 21 is united with the celestial sphere 24. Moreover, as shown in drawing 3 and drawing 22, the 3 and nose-of-cam side of those is attached in piece of guide 39 a-c as the prehension section by which the point was turned up in the shape of a fishhook by especially this piece of ring 21r (ring of the celestial sphere 24 located very much in the 24p side) in the state of the celestial sphere 24 where it turned to the 24p side very much.

[0045] Only a piece catches the ball 2 of the celestial sphere 24 which rolls towards the opening marginal 24e near the 24p very much with the inclination of the celestial sphere 24 by the inclination mechanical component 22, and [piece 39 of guide] each piece of guide 39 a-c releases a ball 2 with the further inclination of the celestial sphere 24, and shows it to the ball path s of the inner lane 21. As shown in drawing 22, namely, each piece of guide 39 a-c Piece of bottom side guide 39a arranged in contact with opening marginal 24e of the celestial sphere 24, It consists of piece of left-hand side guide 39b and piece of right-hand side guide 39c which have been arranged right-angled to this piece of bottom side guide 39a in the edges on both sides in the longitudinal direction of this piece of bottom side guide 39a, and the space where only a piece lets a ball 2 pass among them is formed. Moreover, each piece of guide 39 a-c is turned up toward the outside in the nose of cam in the shape of a key. Therefore, the nose of cam of piece of bottom side guide 39a has estranged only the part of this clinch a little from inside 24i of the celestial sphere 24. this alienation -- an amount is an amount whose ball 2 in contact with inside 24i of the celestial sphere 24 is the grade which can enter about 1/3 in the space between each piece of guide 39 a-c

[0046] Therefore, if one ball 2 of the celestial sphere 24 which begins to roll towards the opening marginal 24e near the 24p very much enters with the inclination of the celestial sphere 24 by the inclination mechanical component 22 in the space between each of this piece of guide 39 a-c Since piece of bottom side guide 39a cannot be overcome but lateral (hoop direction of the celestial sphere 24) movement is moreover also regulated by piece of left-hand side guide 39b, and piece of right-hand side guide 39c, this ball 2 that entered will be in the state where it was held at the nose of cam of each [these] piece of guide 39 a-c. Therefore, with this ball 2 currently held, since other balls 2 have it prevented to enter in the space between each piece of guide 39 a-c, the side of piece of left-hand side guide 39b and piece of right-hand side guide 39c will be turned to opening marginal 24e, and they will roll. The state where one ball 2 is held at the nose of cam of

each of this piece of guide 39 a-c is maintained until the inclination of the celestial sphere 24 progresses further, the inclination of inside 24i (touching virtual flat surface) of the celestial sphere [near the opening marginal 24e] 24 becomes low at the opening marginal 24e side exceeding a horizontal and all the balls 2 begin to fall from opening marginal 24e. And from the state in which the inclination of inside 24i (touching virtual flat surface) of the celestial sphere [near the opening marginal 24e] 24 will be low at the opening marginal 24e side exceeding a horizontal, and all the balls 2 began to fall from opening marginal 24e, if the inclination of the celestial sphere 24 progresses further The ball 2 currently held at the nose of cam of each piece of guide 39 a-c runs aground on piece of bottom side guide 39a, and this piece of bottom side guide 39a top is guided to it to the inner lane 21. Thus, the inside of the inner lane 21 is led to the ball 2 guided into the inner lane 21 to the other end, among these it falls in the outside lane 18 from the other end of a lane 21.

[0047] In addition, the inner lane 21 is located above the outside lane 18 in parallel with the outside [this] lane 18. Moreover, the ball 2 which had it prevented to enter in the space between each piece of guide 39 a-c is greatly crawled by the clinch portion at the nose of cam of piece of left-hand side guide 39b, and piece of right-hand side guide 39c to the side. Therefore, the ball 2 which had it prevented to enter in the space between each piece of guide 39 a-c hardly falls on the outside lane 18.

[0048] Consequently, only the ball 2 of a piece is extracted, it falls on the outside lane 18, and all other balls fall on ***** 13.

[0049] [Outside lane 18] The outside lane 18 (second ball path object) is a kimono whenever it comes to use the semicircle ring 41 instead of piece of ring 21r of the inner lane 21, and it is being fixed to the crowning of a reader 17. The outside [this] lane 18 is curving so that the bottom may carry out opening in order to receive the ball which rolled and came out of the inner lane 21, and it may have the celestial sphere 24 and the inner lane 21, and the center of curvature C of this heart and it may become parallel to the inner lane 21 in the direction of a path centering on center of curvature C. Path 18o which shows a ball 2 to a reader 17 is formed in the bottom of the outside [this] lane 18. The ball 2 which rolled and came out of the inner lane 21 by the outside [this] lane 18 is directly led to a reader 17.

[0050] [Reader 17] A reader 17 Case 17b (references, such as drawing 13 which is the enlarged view of the field XIII portions of drawing 4 , drawing 9 , and drawing 9), **** 17w which is prepared in case 17b and leads to ***** 13 (references, such as drawing 4 , drawing 9 , and drawing 13), In the reading station in the middle of **** 17w halt advance of a ball 2 or The ball path controlling mechanism 43 (references, such as drawing 15 which was seen from [of drawing 14 which is drawing seen from / of drawing 13 and drawing 13 / arrow XIV, and drawing 14] arrow XV and which is an ellipsis view in part) which cancels this and controls the movement of a ball 2 through a ball 2, 2 sets of reader units 45a and 45b (references, such as drawing 16 which is drawing in which seeing drawing 14 and from [of drawing 15] arrow XVI, and adding and showing parts in part) which read the sign of the ball 2 which stopped with the ball path controlling mechanism 43, The ball rolling mechanism 47 (references, such as drawing 17 which is drawing in which seeing drawing 14 and from [of drawing 13] arrow XVII, and adding and showing parts in part) which rotates the ball 2 in a idle state on that spot in order to make easy reading of the ball 2 by the reader units 45a and 45b, It consists of a ball in sensor 49 (references, such as drawing 14 and drawing 15) which detects the existence of the ball 2 in a reading station, and a ball out sensor 51 (refer to drawing 13) which detects whether the ball 2 passed near the outlet of **** 17w. Hereafter, still more detailed explanation of each [these] component is given.

[0051] [Case 17b] case 17b is made of colored plastics, and each above-mentioned composition member is arranged to the interior. Moreover, the front face of case 17b is

equipped with the display 17b1 (refer to drawing 7 and drawing 10) which consists of a Light Emitting Diode which displays the ball number read from the ball 2 included in the reader 17 by which extraction was carried out [aforementioned] .

[0052] The ball inlet 17c1 (refer to drawing 9 and drawing 13) for the ball 2 from path 18o of the outside lane 18 introducing into the interior of case 17b is formed in top-plate 17c of case 17b. This ball inlet 17c1 is connected with path 18o of the outside lane 18.

[0053] [****17w] **** 17w consists of a fork road 17w2 which leads to ***** 13, and 17w3 while branching in the shape of reverse Y character by the soffit of the rectilinear-propagation way 17w1 caudad prolonged from the ball inlet 17c1, and the rectilinear-propagation way 17w1, as shown in drawing 13 , and it is constituted by each by the cylinder which consists of the plastics of a cross-section rectangle or/, and a metal.

[0054] As the rectilinear-propagation way 17w1 is shown in drawing 13 , it is divided into two by the middle, and the medial axis of the top portion and the medial axis of a bottom portion are offset. And the roller 69 of the ball rolling mechanism 47 is arranged at the portion of the shoulder with which the wall of a bottom portion has approached the medial-axis side of a top portion by this offset. Moreover, in the opposite side which counters this roller 69, the top portion and bottom portion of the rectilinear-propagation way 17w1 cut greatly, and lack, and the ball path controlling mechanism 43 is arranged there. Moreover, first reader unit 45a which turned to the medial axis of the rectilinear-propagation way 17w1 above the roller 69 (the same height position as the ball 2 from which passage was prevented by the ball path controlling mechanism 43) is arranged. Moreover, this first reader unit 45a and second reader unit 45b which turned [position / from which only the angle interval of 90 degrees was separated / (near-side position in drawing 13)] to the medial axis of the rectilinear-propagation way 17w1 are arranged about the medial axis of this rectilinear-propagation way 17w1. Moreover, with this second reader unit 45b, the ball in sensor 49 is arranged in the opposite-side position which faced across the rectilinear-propagation way 17w1.

[0055] Moreover, the ball out sensor 51 is arranged at the side attachment wall of **** 17w in the intersection of the rectilinear-propagation way 17w1 and a fork road 17w2-17w3.

[0056] The [ball path controlling mechanism 43] ball path controlling mechanism 43 is arranged in a part for the notch mentioned above so that the side of the rectilinear-propagation way 17w1 may be crossed so that drawing 13 or drawing 16 may show. The susceptor 63 by which this ball path controlling mechanism 43 was fixed on ***** 13 in case 17b, The bearings 61 and 61 of the couple which opened the same interval as the width of face of the top portion of the rectilinear-propagation way 17w1, and was fixed on the susceptor 63, Medial-axis 43c supported to revolve by both [these] the bearings 61 and 61 free [rotation] so that the periphery side of the rectilinear-propagation way 17w1 might be grazed, The ball path controlling mechanism drive motor 44 connected with the end of medial-axis 43c through universal joint 44j and slowdown gearbox 44a, The side plates 53 and 53 of the couple fixed to one to medial-axis 43c in the inside of each bearings 61 and 61 while having the disk 65 fixed to the other end of this medial-axis 43c by the same axle, and the configuration which spread in the radial at intervals of the angle of 120 degrees focusing on medial-axis 43c, Three coupling rods 55 (shown only in drawing 15) which connect the bases of 53h of arms which spread in the radial of each [these] side plates 53 and 53, It consists of three rotation rods 57 over which it was built free [rotation] among the noses of cam of 53h of arms of each side plates 53 and 53, and a detector 67 formed on the susceptor 63 so that a disk 65 might be inserted.

[0057] The unit which consists of a rotation rod 57 of a coupling rod 55 and 3 of 53 or 3 side plates of above-mentioned medial-axis 43c and a couple is in the state supported by

both the bearings 61 and 61, and a rotation drive is carried out with the ball path controlling mechanism drive motor 44.

[0058] On the other hand, three slit 65s extended in the direction of a path is formed in the periphery of a disk 65 at intervals of angles, such as 120 etc. degrees centering on the axial center of medial-axis 43c. Moreover, the above-mentioned detector 67 is constituted as a photo interrupter which detects this slit 65s optically. The angle sensor 59 for detecting the rotation position of the above-mentioned unit is constituted by these detectors 67 and the disk 65. And that the detector 67 of this angle sensor 59 detects each slit 65s of a disk 65 is the rotation position (rotation position shown as a solid line in drawing 13) in which the interval of which rotation rod 57 and a roller 69 became narrower than the outer diameter of a ball 2.

[0059] Therefore, if the ball path controlling mechanism drive motor 44 is stopped when the detector 67 of an angle sensor 59 detects each slit 65s of a disk 65, the above-mentioned unit will stop in the rotation position where the interval of which rotation rod 57 and a roller 69 became narrower than the outer diameter of a ball 2. Then, the top portion of the rectilinear-propagation way 17w1 is closed by the rotation rod 57 and roller 69, and prevents advance of a ball 2.

[0060] And if the rotation drive of the ball path controlling mechanism drive motor 44 is resumed, the above-mentioned unit will reach [from the rotation position shown as the above-mentioned solid line] the rotation position shown with a two-dot chain line via the rotation position shown with an alternate long and short dash line. Then, since the interval of the rotation rod 57 and a roller 69 becomes larger than the outer diameter of a ball 2 at this time, the rectilinear-propagation way 17w1 is opened wide, and the ball 2 which was having passage prevented till then passes through between the rotation rod 57 and rollers 69, falls the inside of the rectilinear-propagation way 17w1, and comes to result in ***** 13 after that through either of the fork roads 17w2-17w3. In addition, also after that, the ball path controlling mechanism drive motor 44 continues a rotation drive, is a time (at the time of 120 degrees rotating) of the above-mentioned unit arriving at the rotation position again shown as the solid line in drawing 13 , and stops rotation.

[0061] [Reader unit 45] each reader units 45a and 45b are reader units with an antenna (Vby OMRON Corp.600-HR 96-1) which receive the ball number information corresponding to this read-out command from this data carrier 2a while they communicate through alternating current magnetic flux to data carrier 2a in a ball 2 and transmit a ball number read-out command to this data carrier 2a. Each reader units 45a and 45b are arranged so that medial-axis 45c and 45c stood to the center of those detection sides may intersect perpendicularly at the center of a ball 2 (ball 2 in a reading station) that passage is prevented with the ball path controlling mechanism 43 (refer to drawing 14).

[0062] The [ball rolling-mechanism 47] ball rolling mechanism 47 is caudad located in the ball path controlling mechanism 43 and the side which counters among the rectilinear-propagation ways 17w1 rather than medial-axis 43c of the ball path controlling mechanism 43 so that drawing 13 or drawing 15 may show. Therefore, the roller 69 of the ball rolling mechanism 47 is in the state of contacting from a slanting lower part to a ball 2. Such a ball rolling mechanism 47 is arranged so that the interior of a top portion of the rectilinear-propagation way 17w1 may be crossed on the outer frame of the bottom portion of the rectilinear-propagation way 17w1. The susceptor 63 by which this ball rolling mechanism 47 was fixed on ***** 13 in case 17b, The bearings 73 and 73 of the couple which opened the same interval as the width of face of the top portion of the rectilinear-propagation way 17w1, and was fixed on the susceptor 63, The roller 69 supported to revolve by both [these] the bearings 73 and 73 free [rotation], It consists of a ball rolling-mechanism drive motor 71 connected with the

end of a roller 69 through universal joint 71j and slowdown gearbox 71a, and rubber 69r wound around the center section of the roller 69 in order to prevent slipping of a ball 2. [0063] Therefore, if the ball rolling-mechanism drive motor 71 rotates, since a roller 69 will rotate according to it, the ball 2 which is in contact with this roller 69 also rotates. [0064] It detects optically whether a ball 2 is in the position (reading station) which the [ball in sensor 49] ball in sensor 49 is attached [position] in the superficies of the rectilinear-propagation way 17w1 [near the universal joint 71j], and has passage prevented by the ball path controlling mechanism 43.

[0065] [Ball out sensor 51] each ball out sensor 51 detects optically whether the ball 2 passed through the rectilinear-propagation way 17w1.

[0066] As shown in drawing 7 , drawing 10 , and drawing 12 (A) , except for a part for the center section in which the reader 17 is laid, the letter guidance way 75 of an inclination is annularly formed in the upper surface of [***** 13] ***** 13. This letter guidance way 75 of an inclination is seen from the upper part of a main part 3, and is deep gradually towards the lift 15 of one lift 15 to another side at the half-clockwise rotation. That is, this letter guidance way 75 of an inclination is bisected by the slot (it becomes deep toward the left of drawing 7 to right-hand side) of the near side of the reader 17 in drawing 7 , and the slot (it becomes deep toward the right of drawing 7 to left-hand side) which the back side of the reader 17 in drawing 7 does not illustrate. Therefore, the ball 2 which came out from the ball 2 which fell to the near side and the fork road 17w2, or the fork road 17w3 rolls and goes to the lift 15 on the right-hand side of drawing 7 by the slot on the near side rather than the reader 17 in drawing 7 . On the other hand, the ball 2 which came out of the ball 2 which fell to the back side, and branching slot 17w rolls and goes to the lift 15 on the left-hand side of drawing 7 by the slot by the side of the back rather than the reader 17 in drawing 7 .

[0067] In addition, it is formed as slant-face 13b between parts for a center section and the bottoms of the letter guidance way 75 of an inclination in the upper surface of ***** 13. And near the lift 15 in this slant-face 13b, as shown in drawing 12 (A) , the ball plugging prevention means is established.

[0068] The slits 13c and 13d of two steps of upper and lower sides are horizontally formed in the plate which constitutes [ball plugging prevention means] slant-face 13b towards the direction of the letter guidance way 75 of an inclination. The ball churning equipment 77 shown in drawing 23 is being fixed to the background of slant-face 13b (plate to constitute) in a these slits [13c and 13d] position. And the revolving arm 771,773 of two steps of upper and lower sides which make a part of this ball churning equipment 77 and which can rotate freely horizontally is exposed in the middle of the rotation in the letter guidance way 75 of an inclination from each slits 13c and 13d, and flips a ball 2 again to an upstream (from a lift 15 to a ***** side [Meeting the letter guidance way 75 of an inclination.]). The exploded view of the ball churning equipment 77 shown in the perspective diagram of drawing 23 is shown in drawing 24 . As shown in each [these] drawing, the frame 786 fixed to 13d of pedestals of a main part 3 has composition which bent respectively finish plate section 786a and underplate section 786b by a unit of 90 degrees focusing on connecting-plate section 786c turned perpendicularly. In addition, connecting-plate section 786c cuts and lacks the fuller abbreviation half towards the other side edge side from the unilateral veranda. the near edge of underplate section 786b by the side of [which was cut and lacked] this -- comparatively -- the bearing of a major diameter -- 786d of holes is punctured the inferior surface of tongue of underplate section 786b -- this bearing -- the bearing material 787 by which bearing hole 787a of an owner bottom is dug with 786d of holes, and the diameter of said -- these bearings -- in the position used as the same axle, screw stop fixation of 786d of holes and the bearing hole 787a is carried out on two screws 789,790 these bearings -- the friction mitigation set to 786d of holes, and bearing hole

787a from a tubed vinyl chloride -- the member 788 is inserted from the upper surface side of finish plate section 786b. In addition, breakthrough 787b of a minor diameter is comparatively formed in the shaft center of the bottom of bearing hole 787a. a bearing [in / finish plate section 786a / on the other hand] -- a bearing / major diameter / the position which counters 786d of holes / b / breakthrough 787] / -- a hole -- 786e is punctured this bearing -- a hole -- the friction mitigation which consists of a silk hat type vinyl chloride in 786e -- the member 803 is inserted in

[0069] the axis of rotation -- two fixation with which the member 775 was located in a line with the longitudinal direction -- along with the medial axis of rectangular plate-like part 775a which has Holes 775d and 775e, and this plate-like part 775a, it was really formed in the inferior surface of tongue of this plate-like part 775a -- along with shank 775b of a long size, and the medial axis of this plate-like part 775a, it was really comparatively formed in the upper surface of this plate-like part 775a -- it consists of shank 775c of an edge size comparatively

[0070] the axis of rotation -- the outer diameter of each shanks 775b and 775c in a member 775 -- both -- the diameter of said -- it is -- friction mitigation -- a member 788 and friction mitigation -- it has a size which can be inserted in a member 803. 775g of periphery slots is formed near the edge of this shank 775b, and the front face cuts and lacks in the plane in 775f of parts near [g / 775 / of this periphery slot] plate-like part 775a so that shank 775b may become cross section-like of D characters. and the cylindrical follower pulley with which minor diameter section 782a in which this shank 775b has the shape of gearing-like surface type is formed near [the] the end -- the medial axis of a member 782 -- it is inserted in the hole the follower pulley which has such a configuration -- 775g of periphery slots of shank after penetrating member 782 775b -- a follower pulley -- a member -- C type fastening plate 784 for preventing defluxion of 782a is inserted in

[0071] the axis of rotation -- each fixation of plate-like part 775a in a member 775 -- the minor diameter sections 771a and 773a formed in the end face of the revolving arm 771,773 which is a cylindrical member are respectively inserted in Holes 775d and 775e. Near the edge of these minor diameter sections 771a and 773a, the periphery slot is formed respectively, and C type fastening plate 776,777 for preventing the omission and backlash of a revolving arm 771,773 is inserted in respectively.

[0072] By the slits 771b and 773b formed in accordance with the shaft, the nose of cam of each revolving arm 771,773 point-breaks, and is carried out while it is respectively rounded off in the shape of a semi-sphere. and the roller of the shape of a disk thinner than the slit width to each slits 771b and 773b -- a member 772,774 is inserted in near the nose of cam of each revolving arm 771,773, a screw hole (illustration abbreviation) forms so that it may intersect perpendicularly with Slits 771b and 773b -- having -- **** -- each roller -- a member 772,774 is supported to revolve free [rotation] with the screw 778,779 thrust into this screw hole that is not illustrated thus, each roller -- if a member 772,774 is attached -- each [these] roller -- after rotation adjustment of each revolving arm 771,773 is carried out so that a member 772,774 may become level, each [these] revolving arm 771,773 is fixed on the set screw 780,781

[0073] Next, the rotation shank material 775 in which each part article was attached as mentioned above is attached in a frame 786. under the present circumstances, a follower pulley -- the annular driving belt 785 which has in advance the inside configuration which gears in the shape of [of the shape of the gearing] surface type is hung on minor diameter section 782a of a member 782 and shank 775b -- a bearing -- 786d of holes, and friction reduction -- it inserts in to these in order of a member 788 (bearing hole 787a) and breakthrough 787b -- having -- next, shank 775c -- friction reduction -- it is inserted in a member 803 the last -- shank 775c -- friction reduction -- while maintaining the state where it was inserted in the member 803 -- a follower

pulley -- a member 782 slides to the nose-of cam side of shank 775b -- having -- friction reduction -- the place which touched the member 778 -- this follower pulley -- a member 782 is fixed to 775f of cross-section [of D characters]-like portions of shank 775b on the set screw 783 thus, rotation -- it is built over a member 775 free [rotation] between finish plate section 786a of a frame 786, and underplate section 786b

[0074] a center near [in underplate section 786b of a frame 786] -- the direction of a major axis -- a bearing -- 786f of breakthroughs of the shape of a long hole towards 786d of holes is formed The motor unit 791 is fixed to the circumference of 786f of breakthroughs in the inferior surface of tongue of this underplate section 786b with 4 sets of bolts 792, and a nut 797. This motor unit 791 builds in revolving-arm drive-motor 77a shown in drawing 26 , and is making 786f of breakthroughs penetrate the driving shaft 793 of this revolving-arm drive-motor 77a in the state where it was fixed to the inferior surface of tongue of underplate section 786b as mentioned above. The front face cuts and lacks this driving shaft 793 in the plane so that the cross section may become D character-like. this driving shaft 793 -- a follower pulley -- a member 782 and an isomorphism-like drive pulley -- the member 794 is being fixed on the set screw 795 of a major axis in addition, this set screw 795 -- a drive pulley -- the state where the member 794 was fixed is shown in drawing 23 -- as -- a drive pulley -- it has projected greatly from the peripheral surface of a member 794 and a drive pulley -- a driving belt 785 is hung on minor diameter section 794a of a member 794 a driving belt 785 -- a drive pulley -- after hanging on minor diameter section 794a of a member 794, the motor unit 791 whole is slid along the direction of a major axis which is 786f of long holes, and the tension of this driving belt 785 is adjusted In addition, it lets it pass for making underplate section 786b of a frame 786 penetrate the bolt 792 mentioned above, and since the slide of the motor unit 791 is permitted, 786g of holes serves as the shape of a long hole parallel to 786f of breakthroughs.

[0075] the drive pulley in the upper surface of underplate section 786b of a frame 786 -- a member 794 -- inserting -- a follower pulley -- the position which serves as an opposite side to a member 782 -- a drive pulley -- the photo interrupter 801 for detecting passage of the set screw 795 which projected from the peripheral surface of a member 794 is being fixed through stay 800 A screw 802 is for fixing this photo interrupter 801 to stay 800.

[0076] Moreover, the motor attached capacitor 796 is being fixed to the inferior surface of tongue of underplate section 786b of a frame 786 on the screw 798.

[0077] the drive pulley attached in the driving shaft 793 when revolving-arm drive-motor 77a in the motor unit 791 saw from the finish plate section 786a side and rotated clockwise in the ball churning equipment 77 constituted as mentioned above -- while a member 794 rotates to one -- a drive pulley -- the follower pulley with which the driving belt 785 is hung between members 794 -- a member 782 rotates in this direction Consequently, the rotation shank material 775 and both the revolving arms 771,773 which are united with this follower pulley 782 see from the finish plate section 786a side, and rotate clockwise. And a revolving arm 773 is exposed [from slit 13c / d / slit 13] in the middle of this rotation for a revolving arm 771 in the letter guidance way 75 of an inclination respectively. However, even when each revolving arm 771,773 carries out peak exposure (protrusion) into the letter guidance way 75 of an inclination, the nose of cam of these revolving arms 771,773 does not cross the letter guidance way 75 of an inclination completely, and it leaves the space for a ball piece between the slant faces of an opposite side. Therefore, the ball 2 with which the ball 2 which invaded in move tracing of each revolving arm 771,773 was returned to the upstream of the letter guidance way 75 of an inclination, and passed along the outside of move tracing of this revolving arm 771,773 rolls in to a lift 15. Since two revolving arms 771,773 are located in a line up and down at this time, the ball 2 which trespassed upon the move field is

returned certainly to the upstream of the letter guidance way 75 of an inclination.

[0078] In addition, when a lot of balls 2 have flowed into about 15 lift at once, the bridge of a ball 2 will be formed all over the letter guidance way 75 of an inclination, and ball plugging of two or more balls 2 including other balls 2 may arise. however, if the ball 2 located in move tracing of each revolving arm 771,773 is put back to the upstream of the letter guidance way 75 of an inclination, while the balance of a ball 2 will collapse and the bridge of a ball 2 will be canceled, the ball 2 choked up while being agitated namely, -- is once put back to the upstream of the letter guidance way 75 of an edge inclination While such a ball's 2 putting back is repeated, the ball 2 passing through the outside of move tracing of each revolving arm 771,773 rolls in to the piece [every] lift 15. It may also be considered that get a ball 2 blocked and depend on how the direction while agitating such a ball 2, and each revolving arm 771,773 bites a ball 2, and the rotation stops. however, the roller which can rotate freely at the nose of cam of each revolving arm 771,773 -- since the member 772,774 is attached, slipping over a ball 2 is good, therefore receives this ball 2 -- it bites and has been hard coming to generate ****

[0079] moreover, a drive pulley -- since the monitor of the rotation of a member 794 is always carried out with the set screw 795 and the photo interrupter 801, when each revolving arm 771,773 bites a ball 2 and has stopped, it is immediately detected by the main-control section 100 (refer to drawing 26) into which the output from a photo interrupter 801 is inputted, and required processing is made

[0080] [Lift 15] As especially each lift 15 is shown in drawing 4 and drawing 10 The pulleys 15b and 15b of the couple supported to revolve crosswise [of outer frame 15a which supports top-plate section 3c with support 3b and the outer frame 15a / near this internal outer frame 15a near the soffit near the upper limit] concerned /, Conveyance belt (conveyance section) 15c over which the pulleys 15b and 15b of these couples were built, The lift drive motor 16 which carries out the rotation drive of the lower pulley 15b through 15d of driving belts, Ball receiving part 15r attached in the front face of conveyance belt 15c at the fixed interval in order to dip up the ball 2 guided by the letter guidance way 75 of an inclination, It consists of remover 15o which turns to a ball 9 the ball 2 which has gone up by conveyance belt 15c, and calculates it from the ball receiving part 15 with ball receiving part 15r at the topmost part (namely, position [a little] higher than the rim of a ball 9) of a lift 15.

[0081] As shown in drawing 12 , the above-mentioned ball receiving part 15r has the fork-like configuration where the nose of cam was divided into two, and holds a ball 2 on slit 15f which divide this nose of cam into two. Since above-mentioned remover 15o enters in these slit 15f after calculating the ball 2 pushed by the ball receiving part 15 going up to a ball 9 side, it does not interfere in the ball receiving part 15 which goes up one after another. The delivery means which lets out a ball 2 to a ball 9 is constituted by this.

[0082] In addition, as shown in drawing 4 , when the move ring 79 and the game equipment 1 for moving game equipment 1 are installed in a recreation hall, in order to maintain balance of game equipment 1, according to the parallelism of the installation, the foot 81 expanded and contracted in the perpendicular direction is formed in the inferior surface of tongue (base) of 3d of pedestals of a main part 3, respectively.

[0083] In order to control <the circuitry of game equipment 1>, next each above-mentioned mechanism, the composition of the circuit built in in game equipment 1 is divided into a main part 3 and station 5 side, and is explained respectively.

[0084] (Circuitry of a main part 3) The composition of the circuit built in the main part 3 is shown in drawing 26 . As shown in drawing 26 , above-mentioned first reader unit 45a, second reader unit 45b, a photo interrupter 801, the ball in sensor 49, an angle sensor 59, an encoder 35, the ball out sensor 51, and display 17b are directly connected to the main-control section 100. Moreover, the celestial-sphere drive motor 31,

revolving arm drive motor 77a, the lift drive motors 16 and 16, the ball path controlling mechanism drive motor 44, and the ball rolling mechanism drive motor 71 are connected to the main control section 100 through the drive circuit 101. Moreover, in addition to this, the direct file of ROM102 and the communication interface 103 is carried out to the main control section 100.

[0085] According to the control instruction from the main control section 100, the drive circuit 101 supplies drive current to each motor, and performs control of the drive or a halt.

[0086] In case ROM102 performs the control program and this program for the ball number data selection performed in the main control section 100, it is a medium which stores various required data.

[0087] The main control section 100 is a computer which controls the main part 3 whole, and performs control for the ball number data selection using each mechanism mentioned above by executing the control program read from ROM102. That is, the main control section 100 incorporates the various data detected by a photo interrupter 801, the ball in sensor 49, the angle sensor 59, the encoder 35, and the ball out sensor 51, recognizes the state of each part of a main part 3, and gives the control instruction for driving each motor to the drive circuit 101 according to it. moreover, the control unit 100 -- the [first reader unit 45a or] -- if ball number data are read by 2 reader unit 45b, while displaying the read ball number data on display 17b1, it transmits to all the stations 5 (subcontrol section 150) through a communication interface 103

[0088] A communication interface 103 transmits an others and bed permission instruction and bed restraining order of this ball number data to each station 5.

[0089] (Circuitry of a station 5) The composition of the circuit built in each station 5 is shown in drawing 27 . As shown in drawing 27 , above mentioned display 5m (display, display means) and the coin acceptance machine 151 are connected to the subcontrol section 150. Moreover, above mentioned pay out button 5a-2 and four button 5b (the A button, the B button, the C button, the D button) is connected to the subcontrol section 150 through the control unit 153 which changes the content of operation into a digital signal. In addition to this, a communication interface 155, and ROM154 and RAM152 are connected to this subcontrol section 150.

[0090] After a communication interface 155 receives the ball number data (sign) transmitted from the main control section 100 of a main part 3, a bed permission instruction, and a bed restraining order and changes this into the data format which can be processed by the subcontrol section 150, it is inputted into the subcontrol section 150.

[0091] In case ROM154 performs the bingo game program performed in the subcontrol section 150, and this program, it is a computer-readable medium which stores various required data.

[0092] The subcontrol section 150 is a computer which controls each station, and develops a bingo game by executing the bingo game program read from ROM154. That is, the subcontrol section 150 starts a bingo game based on the bed information notified from the coin injection information and control unit 153 which were notified from the coin acceptance machine 151. And while generating a bonus table (refer to drawing 29) and a card table (refer to drawing 28) on RAM152 as a storage means, based on the ball number data (sign) inputted from a communication interface 155, the data on this card table are changed and it goes. Moreover, each ***** 150 displays on display 5m, and makes coin pay back to the coin acceptance machine 151 according to the data on this card table at the bingo game end time. namely, this subcontrol section 150 -- the [a display means, an effective field setting means, a sign setting means, a play value receptionist means, an effective field expansion means, a hit mass specification means, a dyke-break means, a dividend means, the mass setting means for a bonus, and] -- it is

equivalent to 2 judging meanses

[0093] Here, the card table developed on RAM152 is explained using drawing 28 . As shown in drawing 25 , the matrix defined by this card table is a matrix which consists of 10x10 masses. And while the mass number which shows the coordinate data (display position) which consists of a x direction position (let the longitudinal direction position in drawing 25 and 1 be leftmost side masses) and a direction position (let the lengthwise position in drawing 25 and 1 be best side masses) of y respectively is given, the numeric value (which numeric value of the range of 1 or 25) of 1 byte set as the mass is written in the entry corresponding to each mass in a card table. Furthermore, 1 byte of status information which shows the present state of the mass corresponding to the entry is set to each entry. the 1st bit of this status information shows the object of a hit judging, and a thing with the effective mass namely, the numeric value set as the mass -- display 5m -- while being displayed above -- Moreover, it is shown that the mass is [bit / 2nd] invalid (that is, not set as the object of a hit judging while the numeric value set as the mass is not displayed on display 5m). Moreover, a triplet eye shows that the numeric value set as the mass is already chosen (namely, thing for which the ball number information on the same value as the numeric value has been notified from the main-control section 100). Moreover, it is shown that the 4th bit of the numeric value set as the mass is not yet chosen (that is, the ball number information on the same value as the numeric value should not be notified from the main-control section 100). Moreover, the 5th bit of the thing for which the mass is set up as a mass for a bonus is shown. Moreover, it is shown that the 6th bit of the mass is not set up as a mass for a bonus. In addition, it is not used for the 7th bit and the bit [8th] state judgment.

[0094] In addition, no masses are still chosen and drawing 28 is not set up as a bonus object while it is set up that only the mass whose y-coordinates x-coordinates are 1-5 and are 1-5 is effective, since the card table of the initial state to which neither of the numeric values of the masses is still set is shown.

[0095] On the other hand, drawing 30 shows the bonus table developed on RAM152. This bonus table is a table which has memorized two or more combination of the mass number set up as a bonus object as shown in drawing 30 . And only the combination of any one mass number is set up as it is effective. The variable ODDS2 which shows the multiple at the time of this bonus being paid is set to the combination of each of this mass number. in addition, the position of the mass corresponding to those mass numbers in the combination of each mass number serves as a form of a constellation -- as -- positioning ***** And if the combination of which mass number is set up as a bonus object, the 5th bit of the status information corresponding to those mass numbers in a card table will be set up with "1", and the 6th bit will be set up with "0."

[0096] Drawing 25 shows the display mode which is display 5m when the bingo game program is performed in the subcontrol section 150 of the station 5. A concrete numeric value is written in the numeric-field of the card table of the state which shows in drawing 28 at this time, and a setup of the mass for a bonus according to the combination shown in the head entry of the bonus table of drawing 29 (it corresponds to the array of the Queen Cassiopeia) is made.

[0097] It returns to drawing 27 , and the coin acceptance machine 151 keeps the thrown-in coin while it detects the coin thrown in from 5t of coin slots and notifies coin injection information to the subcontrol section 150. Moreover, the coin acceptance machine 151 discharges the coin of the number of sheets ordered to perform a repayment from exhaust port 5p, when a coin repayment instruction is received from the subcontrol section 150.

[0098] The content of <processing performed in game equipment 1>, next the processing performed in each circuit constituted as mentioned above is explained.

[0099] (Processing performed in the main-control section 100 of a main part 3) The

content of the control processing which the main-control section 100 which read first the control program stored in ROM102 of a main part 3 performs is explained based on the flow chart of drawing 30 and drawing 31.

[0100] Processing of drawing 30 is started by supplying a main power supply to the main-control section 100. And in S001 of the beginning, the main-control section 100 returns the state of each mechanism in a main part 3 to an initial state while initializing various kinds of variables used for processing execution. The main-control section 100 makes the celestial-sphere drive motor 31 specifically control by outputting a control signal to the drive circuit 101 to return the celestial sphere 24 to a home position. Moreover, the main-control section 100 will make the ball path controlling mechanism drive motor 44 control by outputting a control signal to the drive circuit 101 to discharge this ball 2 from a reader 17, if it seems that the detection result of the ball in sensor 49 was checked, and this ball in sensor 49 has detected the ball 2. If the state of the angle mechanism in a main part 3 returns to an initial state these results, the main-control section 100 will stop each motor to the drive circuit 101.

[0101] The main-control section 100 makes swing of the celestial sphere 24 by the celestial-sphere drive motor 31 start by outputting a control signal to the drive circuit 101 in the following S002. This swing is making the celestial sphere 24 turn, after repeating operation which carries out about 20-degree (angle smaller than angle from which direction of field (plane of composition) of field near rim 24e in celestial-sphere inside 24i becomes level) grade rocking of the celestial sphere 24 a center [a zero] 4 times, and returning the celestial sphere 24 to a zero.

[0102] In the following S003, the main-control section 100 transmits a bed restraining order to each station 5. This bed restraining order is a command for making the bed receptionist for a next bingo game close at each station 5.

[0103] The main-control section 100 makes rotation of the revolving arm 771,773 by revolving-arm drive-motor 77a start by outputting a control signal to the drive circuit 101 in the following S004.

[0104] The main-control section 100 makes both [between fixed time] the lifts 15 and 15 drive with both the lift drive motors 16 and 16 to the drive circuit 101 in the following S005 (conveyance belt 15c is rotated to the forward direction). This fixed time is time of a grade when the number of the balls 2 sent out in a ball 9 by both the lifts 15 and 15 becomes a total of ten pieces. And the main-control section 101 also stops revolving-arm drive-motor 77a while suspending both the lift drive motors 16 and 16, if this fixed time passes.

[0105] In the following S006, the main-control section 100 confirms whether the ball in sensor 49 has detected the ball 2. And when the ball in sensor 49 has not detected the ball 2, the main-control section 100 makes swing of the celestial sphere 24 start again with the celestial-sphere drive motor 31 to the drive circuit 101 in S007. The main-control section 100 returns processing to S004 after execution of S007.

[0106] On the other hand, when it judges with the ball in sensor 49 having detected the ball 2 in S006, the main-control section 100 sets a ball selection permission flag in S008. This ball selection permission flag is a flag which shows that ball number data are read from the ball 2 which is in the reading station in a reader 17 in this time.

[0107] In the following S009, the main-control section 100 confirms whether the ball selection permission flag is set in this time. Since the ball selection permission flag is surely set when processing enters immediately after S008 these S009, the main-control section 100 advances processing to S010.

[0108] In S010, the main-control section 100 directs the rotation start of the ball rolling-mechanism drive motor 71 to the drive circuit 101. It continues rotating the ball rolling-mechanism drive motor 71 until the drive circuit 100 which received these directions has directions (S018) of a rotation halt from the main-control section 100.

[0109] In the following S011, the main-control section 100 confirms whether the celestial sphere 24 rotated two times and the zero was passed after execution of S010. And if the celestial sphere 24 still rotates two times and the zero is not passed, a control section 100 publishes a lead command to first reader unit 45a in S012.

[0110] In the following S013, the main-control section 100 confirms whether the ball number data corresponding to the lead command published in S012 were received from first reader unit 45a. And when ball number data are received, processing is advanced to S017.

[0111] On the other hand, when it judges with ball number data having been unreceivable in S013, the main-control section 100 publishes a lead command to second reader unit 45b in S014.

[0112] In the following S015, the main-control section 100 confirms whether the ball number data corresponding to the lead command published in S014 were received from second reader unit 45b. And when ball number data are received, processing is advanced to S017.

[0113] On the other hand, when it judges with ball number data having been unreceivable with second reader unit 45b, the main-control section 100 returns processing to S011, and performs processing for ball number data read-out again. In addition, when the celestial sphere 24 rotates two times and has passed the zero, without receiving ball number data as a result of repeating loop processing of S011 or S015, processing is advanced to S016 from S011. In these S016, a main control 100 carries out the message indicator of data carrier 2a of the ball 2 in a reading station, or the purport which has a possibility that failure (data error) might arise in both the reader units 45a and 45b to display 17b1. The main-control section 100 ends all processings after this S016 execution.

[0114] In S017 performed when ball number data are able to receive from which reader units 45a and 45b, the main-control section 100 resets a ball selection permission flag, and forbids read-out of future ball number data.

[0115] In the following S018, the main-control section 100 directs a rotation halt of the ball rolling-mechanism drive motor 71 to the drive circuit 101.

[0116] In the following S019, the main-control section 100 transmits the ball number data received in S013 or S015 towards all the stations 5.

[0117] In the following S020, the main-control section 100 displays the number corresponding to the ball number data received in S013 or S015 on display 17b.

[0118] In the following S021, the main-control section 100 transmits a bed permission instruction to each station 5. This bed permission instruction is a command for enabling the bed receptionist for a next bingo game at each station 5.

[0119] Processing is returned to S009 after execution of S021. In this case, since the ball selection permission flag is reset in S017, in S009, it is judged that the ball selection permission flag is not set and processing is advanced to S022.

[0120] In S022, the main-control section 100 confirms whether the ball in sensor 49 has detected the ball 2. And when it judges with the ball in sensor 49 having detected the ball 2, the main-control section 100 makes rotation of the ball path controlling mechanism drive motor 44 start by outputting a predetermined control signal to the drive circuit 101 in S023. Then, the main-control section 100 waits for an angle sensor 59 (detector 67) to detect slit 65s of a disk 65 in the following S024. And if slit 65s is detected, the main-control section 100 will stop rotation of the ball path controlling mechanism drive motor 44 to the drive circuit 101 in S025. The main-control section 100 advances processing to S026 after execution of S025.

[0121] On the other hand, when it judges with the ball in sensor 49 having not detected the ball in S022, the main-control section 100 advances processing to S026 directly. In S026, after the celestial sphere 24 turns the main-control section 100, it confirms

whether 1 cycle of swing operation was ended by passing a zero. And when it judges with the celestial sphere 24 having not passed the zero, processing is returned to S022. On the other hand, when it judges with the celestial sphere 24 having passed the zero, the main-control section 100 advances processing to S027.

[0122] In S027, the main-control section 100 transmits a bed restraining order to each station 5.

[0123] In the following S028, the main-control section 100 confirms whether the ball in sensor 49 has detected the ball 2. And when it judges with the ball in sensor 49 having detected the ball 2, the main-control section 100 advances processing to S029. The processing after S029 is processing in order to discharge the ball 2 after the 2nd piece, without reading ball number data, when two or more balls 2 enter in a reader 17. That is, the main-control section 100 stops rotation of the celestial sphere 24 by the celestial-sphere drive motor 31 by outputting a predetermined control signal to the drive circuit 101 in S029. Then, the main-control section 100 makes rotation of the ball path controlling mechanism drive motor 44 start by outputting a predetermined control signal to the drive circuit 101 in the following S030. Then, the main-control section 100 waits for an angle sensor 59 (detector 67) to detect slit 65s of a disk 65 in the following S031. And if slit 65s is detected, the main-control section 100 will stop rotation of the ball path controlling mechanism drive motor 44 to the drive circuit 101 in S032. The main-control section 100 returns processing to S028 after execution of S032.

[0124] On the other hand, when it judges with the ball in sensor 49 having not detected the ball 2 in S028, the main-control section 100 returns processing to S002, and extracts the following ball 2.

[0125] In addition, in control processing of drawing 30 and drawing 31 which were explained as mentioned above, while deleting S008, S009, and S017, when it judges with the ball in sensor 49 having detected the ball 2 in S006, immediately after performing S010 immediately and performing S021, you may be made to perform S022.

[0126] Moreover, while deleting S007, when it judges with the ball in sensor 49 having not detected the ball 2 in S006, you may advance processing to S026 immediately.

[0127] (Processing performed in the subcontrol section 150 of a station 5) Next, at each station 5, the content of the control processing which the subcontrol section 150 which read the bingo game program stored in ROM154 performs is explained based on the flow chart of drawing 32 or drawing 38.

[0128] If a main power supply is supplied to the subcontrol section 150, the coin ON appearance management routine of drawing 32, the bed management routine of drawing 33, drawing 34, and the game control routine of drawing 35 will start simultaneously, and parallel processing will be henceforth carried out (in addition, drawing 36 or drawing 38 is a sub routine performed within the game control routine of drawing 35). Hereafter, these three routines are explained in order.

[0129] [Coin ON appearance management routine] By the coin ON appearance management routine of drawing 32, the subcontrol section 150 resets Variable CREDIT in S101 of the beginning.

[0130] In the following S102, the subcontrol section 150 confirms whether coin injection information was inputted from the coin acceptance machine 151. This coin injection information is published whenever the coin acceptance machine 151 receives piece coin. When this coin injection information is inputted, the subcontrol section 150 advances processing to S104, after incrementing one variable CREDIT in S103. On the other hand, when coin injection information is not inputted, processing is directly advanced to S104.

[0131] In S104, the subcontrol section 150 confirms whether the play person who occupies whether Variable BET is 0 and this station has participated in the bingo game. This variable BET is the numeric value (play value) which data-ized the coin (risked)

number of sheets by which the bed was carried out in the bed management routine of drawing 33 . And when Variable BET is not 0 (i.e., when the play person has participated in the bingo game), the subcontrol section 150 returns processing to S102. This is because it cannot liquidate during game participation although it is because the processing after S105 is a repayment of coin.

[0132] On the other hand, since it can liquidate when Variable BET is not 0 (i.e., when the play person has not participated in a bingo game), processing after S105 is performed. In S105, the subcontrol section 150 confirms whether pay out button 5a-2 were pushed. And since it is not necessary to pay back when pay out button 5a-2 are not pushed, processing is returned to S102.

[0133] On the other hand, when pay out button 5a-2 are pushed, the subcontrol section 150 directs a repayment of the coin of Variable CREDIT and the same number to the coin acceptance machine 151 in S106. Then, the subcontrol section 150 returns processing to S102, after resetting Variable CREDIT in the following S107.

[0134] While a play person can always do the additional injection of the coin the above result and being able to add CREDIT, on condition that the bed has not been carried out, the coin for the CREDIT balance can be pulled out at any time to get down from a game. Therefore, a result which can perform participation of a game freely is brought.

[0135] [Bed management routine] By the bed management routine of drawing 33 , in S201 of the beginning, the subcontrol section 150 resets Variable BET while carrying out initial setting of the bed method to a "one-sheet bed."

[0136] In the following S202, the subcontrol section 150 confirms whether Variable CREDIT is one or more. And since it is the situation that the play person does not yet throw in coin, or the situation that the play person has used up all CREDIT(s), it risks and there is no object when Variable CREDIT is 0, processing is returned to S202.

[0137] On the other hand, when Variable CREDIT is one or more, the subcontrol section 150 confirms whether the bed is permitted by the main-control section 100 of a main part 3 in S203. That is, already, although the bed permission instruction (S002) is transmitted, a bed restraining order still confirms whether be the situation which is not transmitted. And when the bed is not permitted (i.e., when the bed permission instruction is not yet transmitted), or when the bed restraining order is already transmitted, the subcontrol section 150 returns processing to S202.

[0138] On the other hand, when the bed is permitted, the subcontrol section 150 confirms whether the bed select button (the B button) was pushed in S204. And when a bed selection (the B button) is pushed, the subcontrol section 150 changes the bed method in S205. That is, when the bed method set up now is a "one-sheet bed", the bed method is changed to a "five-sheet bed." On the other hand, when the bed method set up now is a "five-sheet bed", the bed method is changed to a "one-sheet bed." In addition, a "one-sheet bed" is the method of risking CREDIT for one coin, and a "five-sheet bed" is the method of risking CREDIT for five coin collectively here. The subcontrol section 150 will advance processing to S206, if this bed method change processing is completed. On the other hand, when the bed select button (the B button) is not pushed in S204, the subcontrol section 150 advances processing to S206 directly.

[0139] In S206, the subcontrol section 150 confirms whether the bed button (the D button) was pushed. And when the bed button (the D button) is not pushed, the subcontrol section 150 returns processing to S202.

[0140] On the other hand, when a bed button (the D button) is pushed, the subcontrol section 150 confirms whether the bed method set up now is a "one-sheet bed" or it is a "five-sheet bed" in S207. And when the bed method set up now is a "one-sheet bed", after the subcontrol section 150 sets "a flag with an one-sheet bed" in S208, increments one variable BET in S209 and carries out the one decrement of the variable CREDIT in S210, it returns processing to S202. On the other hand, when the bed method set up

now is a "five-sheet bed", after the subcontrol section's 150 setting "a flag with a five-sheet bed" in S211, incrementing Variable BET five times in S212 and carrying out 5 decrements of the variable CREDIT in S213, processing is returned to S202 (equivalent to a play value receptionist means).

[0141] A play person can perform a recurrence bed, as long as the bed is permitted for CREDIT by not 0 but the main-control section 100 of a main part 3 the above result. And the bed method can be changed to a "five-sheet bed" and can carry out a bed at once to carry out the bed of the five sheets collectively.

[0142] [Game control routine] In drawing 34 and the game control routine of drawing 35, the subcontrol section 150 carries out initial setting of the various variables used for processing respectively in S301 of the beginning. While resetting respectively the variable BINGONEW which shows the count result of the Variable BINGOOLD and the number of victories in this time which show the variable Ba which specifically shows the number of ball number data which received, and the number of victories counted just before, and the variable WIN which shows the total of the number of victories to 0, the variable ODDS1 which shows the dividend multiple (odds) over the number of victories is set as 10.

[0143] In the following S302, the subcontrol section 150 confirms whether Variable CREDIT is one or more. That is, it is confirmed whether the play person occupied the station 5 concerned and coin was thrown in. And when Variable CREDIT is 0 (i.e., when the play person does not yet throw in coin), the subcontrol section 150 performs demonstration execution in S303. In this demonstration execution, animation display which shows the content of a game to a **** sake for people's interest on display 5m is performed. This demonstration execution is repeated until it is judged that CREDIT became one or more in S302.

[0144] In S304 performed when CREDIT becomes one or more, the subcontrol section 150 sets as 5 the variable n which shows the dip and breadth of a field of a mass which are set up noting that it is effective, while resetting the card table developed on RAM152 to the initial state shown in drawing 28 (equivalent to an effective field setting means).

[0145] In the following S305, the subcontrol section 150 sets up the numeric value chosen as each numeric-field of a card table from within the limits of 1-25 at random (equivalent to a sign setting means).

[0146] In the following S306, the subcontrol section 150 sets the mass corresponding to the total mass number of a publication as which entry in a bonus table as a bonus object on a card table (equivalent to the mass setting means for a bonus). Specifically, the 5th bit of the status information corresponding to each mass number is set up with 1, and the 6th bit is set up with 0. Simultaneously with it, a variable ODDS2 is read from the same entry.

[0147] In the following S307, the subcontrol section 150 displays the numeric value of all the masses set up in the card table as it is effective on display 5m while displaying the matrix which consists of a mass of 10x10 on display 5m (equivalent to a display means). Simultaneously, an asterisk is displayed on all the masses set up as a bonus object in the card table irrespective of whether it is set up that it is effective (within the mass set up as it is effective, a numeric value and an asterisk are displayed in piles.).

[0148] In the following S308, the subcontrol section 150 checks it one or more for Variable BET. That is, it is confirmed whether the play person has participated in the bingo game. And when Variable BET is 0 (i.e., when the play person has not yet participated in a bingo game), the subcontrol section 150 confirms whether the game button (the C button) is pushed in S309. This game button (the C button) is pushed when the play person who is looking at display 5m is not pleased in the position and number of masses for a bonus. Therefore, if this game button (the C button) is pushed,

the subcontrol section 150 will return processing to S306, and will read a mass number and a variable ODDS2 from another entry in a bonus table. On the other hand, if the game button (the C button) is not pushed, processing will be returned to S308.

[0149] If Variable BET becomes one or more as a result of repeating S306 of a more than, or loop processing of S309, processing will progress to S310. In these S310, the subcontrol section 150 confirms whether "the flag with a five-sheet bed" is set. And when "the flag with a five-sheet bed" is set, the subcontrol section 150 increments one variable n in S311. In the following S312, all the masses whose y-coordinates an x-coordinate is 0-n and are 0-n are re(equivalent to an effective field expansion means) set up as it is effective. Specifically, the 1st bit of the status information of these masses on a card table is set up with 1, and the 2nd bit is reset up with 0. The subcontrol section 150 resets "a flag with a five-sheet bed" in the following S313, and advances processing to S317.

[0150] On the other hand, when it is judged that "the flag with a five-sheet bed" is not set in S310, the subcontrol section 150 confirms whether "the flag with an one-sheet bed" is set in S314. And when "the flag with an one-sheet bed" is set, the subcontrol section 150 re(equivalent to an effective field expansion means) sets up only one arbitrary mass which adjoins the field which consists of all masses whose y-coordinates an x-coordinate is 0-n and are 0-n in S315 as it is effective. Specifically, the 1st bit of the status information of the mass concerned on a card table is set up with 1, and the 2nd bit is reset up with 0. The subcontrol section 150 resets "a flag with an one-sheet bed" in the following S316, and advances processing to S317.

[0151] On the other hand, when it is judged that "the flag with an one-sheet bed" is not set in S314, the subcontrol section 150 advances processing to S317 directly.

[0152] In S317, the subcontrol section 150 displays the numeric value of the mass newly set up as it is effective on display 5m.

[0153] In the following S319, the subcontrol section 150 waits to notify ball number data from the main-control section 100 of a main part 3. And when ball number data have been notified, it is confirmed whether the numeric value of the subcontrol section 150 shown with the notified ball number data in S320 is the same as which numeric value indicated on the card table. And when the numeric value shown with ball number data differs from any numeric value indicated on the card table, the subcontrol section 150 returns processing to S319.

[0154] On the other hand, when in agreement with which numeric value the numeric value shown with ball number data was indicated to be on the card table (i.e., when which numeric value indicated on the card table is chosen with the main part 3 as a sign selection means), the subcontrol section 150 advances processing to S321.

[0155] Drawing 36 is a flow chart which shows the hit judging routine which is a sub routine performed in these S321. Going into this sub routine, by S401 of the beginning, the subcontrol section 150 hits and sets up the mass corresponding to the selected numeric value as a mass (equivalent to a hit mass specification means). Specifically, the triplet eye of the status information of the mass concerned on a card table is set up with 1, and the 4th bit is reset up with 0.

[0156] In the following S402, the subcontrol section 150 changes into a different color from other masses the foreground color of the mass which hit in S401 and was set up as a mass.

[0157] In the following S403, the numeric value as which the subcontrol section 150 was chosen confirms whether it is in agreement with the numeric value beforehand memorized as a numeric value for reach (S612). And when the selected numeric value is not in agreement with the numeric value for reach, the subcontrol section 150 advances processing to S405 as it is.

[0158] On the other hand, when the selected numeric value is in agreement with the

numeric value for reach, the subcontrol section 150 performs a bingo judging routine in S404. Drawing 37 is a flow chart which shows the bingo judging routine which is a sub routine performed in these S404. Going into this sub routine, by S501 of the beginning, the subcontrol section 150 initializes the judgment direction.

[0159] In the following S502, since the subcontrol section 150 went into this sub routine, it has confirmed whether all the directions were judged. Here, all the directions are lengthwise [the judgment line on the display 5m is indicated to be in drawing 39], the longitudinal direction the judgment line on the display 5m is indicated to be in drawing 40 , and the direction of slant where the judgment line on the display 5m is shown in drawing 41 . With this check, only when the judgment direction set up now is slanting, it is judged that the judgment of all the directions was performed.

[0160] And when the judgment of all the directions is not yet settled (i.e., when the judgment direction set up now is initial value (0), length, or width), the subcontrol section 150 changes the judgment direction in S503. That is, when the judgment direction set up now is initial value (0), it changes perpendicularly, when the judgment direction set up now is length, it changes horizontally, and when the judgment direction set up now is width, it changes into slant.

[0161] In the following S504, the subcontrol section 150 sets up variable No. for specifying a judgment line with 0. This variable No. corresponds to the number with a round head given to the judgment line shown by the arrow in drawing 39 - drawing 41 . Although the ranges of this variable No. are 0-10 when the judgment direction is length, and when the judgment direction is width, when the judgment direction is slanting, they are 0-22.

[0162] In the following S505, the subcontrol section 150 increments one variable No.

[0163] In the following S506, the subcontrol section 150 sets up the number of the effective masses in a line (the total number of masses set up in the judgment line specified by No. as it is effective) as a variable i which shows the number of judgment lines (the number of masses with which it is judged whether it is a hit continuously).

[0164] In the following S507, the subcontrol section 150 sets up with 0 the variable j which shows a judgment origin.

[0165] In the following S508, the subcontrol section 150 increments one variable j.

[0166] In the following S509, it is confirmed whether from the j-th mass in the effective mass train in the judgment line specified by No., the subcontrol section 150 is set up as all of i masses are hit masses. And when it is not set up that all of i masses are hit masses, the subcontrol section 150 confirms whether the value of the variable j at present is in agreement with the value of (the number of effective masses in line-variable i+1) in S510. When the value of the variable j at present is in agreement with the value of (the number of effective masses in line-variable i+1), it is the case where the number of the effective masses which continue from a judgment origin is in agreement with the number of judgment lines, and is the case where a judgment origin cannot be shifted any more. Therefore, if the value of the variable j at present is not in agreement with the value of (the number of effective masses in line-variable i+1), since the position of a judgment origin can be shifted back, processing is returned to S508 and Variable j is incremented.

[0167] On the other hand, when the value of the variable j at present is in agreement with the value of (the number of effective masses in line-variable i+1), the subcontrol section 150 confirms whether the value of the variable i at present is 5 in S511. The number of continuation of the minimum hit mass for bingo being materialized also in this operation gestalt is 5. Therefore, when the value of the variable i in this time is larger than 5, the subcontrol section 150 returns processing to S507, after carrying out the one decrement of the variable i in S515.

[0168] Even if it repeated S507-S511 of a more than, and loop processing of S515, when

it is not judged with all of i masses being hit masses in S509 from the j -th of the effective mass train in the judgment line specified by No., since bingo is not materialized, in order to change a judgment line, in the judgment line specified by No. at present, processing is advanced to S514.

[0169] On the other hand, when it is judged with all of i masses being hit masses in S509 from the No. j side in the effective mass train in the judgment line specified by No., the subcontrol section 150 advances processing to S512 noting that bingo is materialized (equivalent to a judgment means). In S512, the subcontrol section 150 adds the value which subtracted 4 from Variable i to the variable BINGONEW which shows the counted value of the number of victories. It wins, it is a number, and when bingo is materialized by [which five hit masses accept and follow] having been given to the bingo concerned, it becomes the value which subtracted 4 from this variable i with 1.

[0170] In the following S513, the foreground color of all the masses (mass which formed bingo) judged as the subcontrol section 150 hitting in S509, and being a mass is made into a different color from other masses (non-chosen a mass and a hit mass). After that, the subcontrol section 150 advances processing to S514, in order to perform the judgment on other judgment lines.

[0171] In S514, the subcontrol section 150 confirms whether the value of variable No. at present is the maximum (the case of length or width when [10 and when slanting] 22) in the judgment direction in this time. And when it is not yet maximum, in order to perform the judgment to the next judgment line, processing is returned to S505.

[0172] On the other hand, since the judgment about all the judgment lines in the judgment direction in this time has ended when the value of variable No. at present has reached maximum, processing is returned to S502.

[0173] As a result of repeating the above loop processing of S502-S514, when it is judged that the judgment of all the directions was completed, the subcontrol section 150 sets up the value which subtracted Variable BINGONEW from Variable BINGOOLD in S516 as a newly generated value of the variable BINGOADD which wins and shows a number.

[0174] In the following S517, the subcontrol section 150 adds the value of Variable BINGOADD to the variable WIN which shows the total of the number of victories.

[0175] In the following S518, the value of the variable BINGONEW at present is written as a value of the variable BINGOOLD at the time of next sub routine execution, and the subcontrol section 150 moves it.

[0176] In the following S519, the subcontrol section 150 resets the value of Variable BINGONEW.

[0177] If the above processing ends, the subcontrol section 150 will end this sub routine, and will return to processing of drawing 37 . In the routine of drawing 37 by which processing was returned, the subcontrol section 150 advances processing to S405.

[0178] In S405, the subcontrol section 150 performs a reach judging routine. Drawing 39 is a flow chart which shows the reach judging routine which is a sub routine performed in these S405. Going into this sub routine, by S601 of the beginning, the subcontrol section 150 initializes the judgment direction.

[0179] In the following S602, the subcontrol section 150 confirms like S502 whether have judged all the directions, since it went into this sub routine.

[0180] And when the judgment of all the directions is not yet settled (i.e., when the judgment direction set up now is initial value (0), length, or width), the subcontrol section 150 changes the judgment direction like S503 in S603.

[0181] In the following S604, the subcontrol section 150 sets up variable No. for specifying a judgment line with 0.

[0182] In the following S605, the subcontrol section 150 increments one variable No.

[0183] In the following S606, the subcontrol section 150 sets up with 5 the variable i which shows the number of judgment lines.

[0184] In the following S607, the subcontrol section 150 sets up with 0 the variable j which shows a judgment origin.

[0185] In the following S608, the subcontrol section 150 increments one variable j.

[0186] In the following S609, it is confirmed whether from the j-th mass in the effective mass train in the judgment line specified by No., the subcontrol section 150 is set up as all the masses of an individual are hit masses (i-1). And when it is not set up that all of i masses are hit masses, the subcontrol section 150 confirms whether the value of the variable j at present is in agreement with the value of (the number of effective masses in line-variable i+1) in S610. And if the value of the variable j at present is not in agreement with the value of (the number of effective masses in line-variable i+1), since the position of a judgment origin can be shifted back, processing is returned to S608 and Variable j is incremented.

[0187] On the other hand, since the position of a judgment origin cannot be back shifted when the value of the variable j at present is in agreement with the value of (the number of effective masses in line-variable i+1), the subcontrol section 150 advances processing to S614.

[0188] As a result of repeating the above loop processing of S608-S610, when it was set up from the j-th mass in the effective mass train in the judgment line specified by No. that all the masses of an individual are hit masses (i-1) and it is able to judge in S609, processing is advanced to S611. In S611, the following mass which became a candidate for a judgment in S609 and which hits and follows a mass train hits, and the subcontrol section 150 confirms whether be a mass or not. And it can be considered that it is the mass train in which the following mass concerned hit, and it has materialized bingo to the following mass concerned in being a mass. Therefore, in order to set up the following mass for reach further, the subcontrol section 150 returns processing to S607, after incrementing Variable i in S613.

[0189] on the other hand, by the following mass which became a candidate for a judgment in S609 and which hits and follows a mass train hitting, in not being a mass Since it can consider that it is the situation that reach is materialized, the subcontrol section 150 In S612, while changing the foreground color of the mass which became a candidate for a judgment in S609 and which hits and adjoins before and after a mass train into a different color from other masses (a non-chosen mass, a hit mass, and mass in which bingo is materialized), the numeric value of the mass of the order concerned is memorized as a numeric value for reach. If processing by these S612 is completed, the subcontrol section 150 will advance processing to S614.

[0190] In S614, the subcontrol section 150 confirms whether the value of variable No. at present is the maximum (the case of length or width when [10 and when slanting] 22) in the judgment direction in this time. And when it is not yet maximum, in order to perform the judgment to the next judgment line, processing is returned to S605.

[0191] On the other hand, since the judgment about all the judgment lines in the judgment direction in this time has ended when the value of variable No. at present has reached maximum, processing is returned to S602.

[0192] As a result of repeating the above loop processing of S602-S614, when it is judged that the judgment of all the directions was completed, the subcontrol section 150 ends this sub routine, and returns to processing of drawing 37 . In the routine of drawing 36 by which processing was returned, the subcontrol section 150 returns processing to drawing 35 further.

[0193] In the routine of drawing 35 by which processing was returned, the subcontrol section 150 increments one variable Ba in S322.

[0194] In the following S323, the subcontrol section 150 confirms whether the value of the variable Ba at present is less than ten. And when the value of Variable Ba is still less than ten, the subcontrol section 150 returns processing to S319, in order that this

bingo game may wait for the notice of the following ball number data as what is not yet ended.

[0195] On the other hand, when the value of the variable Ba at present amounts to 10, the subcontrol section 150 advances processing to S324 as what this bingo game ended for liquidation of CREDIT. In S324, the subcontrol section 150 confirms whether the value of the variable WIN at present is 0. And since one does not need to add CREDIT because bingo is not materialized when the value of Variable WIN is 0, processing is advanced to S328 as it is.

[0196] On the other hand, in order to add CREDIT since one bingo is materialized at least when the value of Variable WIN is one or more (dividend of play value), the subcontrol section 150 advances processing to S325. In these S325, the subcontrol section 150 adds the value which multiplied variables BET and ODDS1 at Variable WIN to the variable CREDIT at present (equivalent to a dividend means).

[0197] And in the following S326, the subcontrol section 150 confirms whether the conditions for bonus grant are satisfied (equivalent to the second judgment means). If all the masses set up as a bonus object in the card table are effective and are specifically chosen, it will be confirmed whether it is shown by status information. And when the conditions for bonus grant are satisfied, the subcontrol section 150 adds the value which multiplied ODDS2 at Variable BET to the variable CREDIT at present in S327. Then, the subcontrol section 150 advances processing to S328. On the other hand, when it is judged that the conditions for bonus grant are not satisfied in S326, the subcontrol section 150 advances processing to S328 as it is.

[0198] In S328, the subcontrol section 150 resets Variable BET. The subcontrol section 150 returns processing to S301 after that for preparation of a start of a new game.

[0199] <Operation of game equipment 1>, next actual operation in the game equipment by this operation gestalt constituted as mentioned above are explained.

[0200] (Game preparation stage) If a power supply is supplied to game equipment 1, the subcontrol section 150 of each station 5 will perform demonstration execution (S303). And if the play person who looked at the demonstration display on display 5m throws in coin from 5t of coin slots, the subcontrol section 150 will increase Variable CREDIT according to the injection number of sheets of coin (S103). Furthermore, the subcontrol section 150 sets up a bonus while it initializes a card table (S304) and writes a numeric value in the column of each mass in this card table at random in 1-25 (S305) (S306). And based on the card table which performed such a setup, the matrix of vertical 10 mass x width 10 mass is displayed on display 5m (S307). At this time, since it is set as n= 5, the numeric value is displayed as a mass only with the effective field of vertical 5 mass x width 5 mass. Moreover, an asterisk is displayed on the mass to which the bonus is set.

[0201] In the state where the power supply was supplied to game equipment 1, and it has started on the other hand, the main-control section 100 of a main part 3 transmits a bed permission instruction towards each station 5 periodically (S021). At the station 5 which received this bed permission instruction, on condition that Variable CREDIT is one or more, a bed becomes possible (S206). At this time, a play person depends on self judgment and can choose an one-sheet bed or a five-sheet bed as the bed method (S204, S205, S207). When an one-sheet bed is chosen and a bed button (the D button) is chosen, the mass which adjoins the field of vertical 5 mass x width 5 mass becomes effective [one] (S315), and the numeric value is displayed (S317). On the other hand, when a five-sheet bed is chosen and a bed button (the D button) is chosen, an effective field increases by one mass in all directions, respectively, becomes effective [the field of vertical 6 mass x width 6 mass] (S312), and the numeric value is displayed (S317). Such a bed is possible until a bed restraining order is transmitted from the main-control section 100 of a main part 3 (S027), and a field is expanded whenever this bed is made. In addition, if a bed is made, Variable BET will also increase according to the number of

sheets. That is, it doubles and the number of medals (CREDIT number) repaid when bingo is materialized, while possibility that bingo would be materialized increased, when BET was made also goes.

[0202] Then, if the main-control section 100 of a main part 3 turns a bed restraining order to each station 5 and transmits (S027), the value of BET in each station 5 and the content of a card table will be decided, and extraction of the ball 2 in a main part 3, read-out of ball number data, and the bingo game in each station will start, respectively (S319).

[0203] (Ball number data selection stage) If a game starts, the main-control section 100 of a main part 3 directs rotation of the revolving arm 771,773 by revolving-arm drive-motor 77a while directing the swing start of the celestial sphere 24 by the celestial-sphere drive motor 31 to the drive circuit 101 (S02) (S004). Consequently, since the ball 2 choked up near the lift in the letter guidance way 75 of an inclination of the **** ball section 13 is put back to the upstream of the letter guidance way 75 of an inclination, a ball 2 comes to roll in in the 1 **** lift 15.

[0204] Next, the main-control section 100 of a main part 3 orders the drive of the lift by both the lift drive motor 16 to the drive circuit 101 (S005). Therefore, the ball 2 included in ball receiving part 15r of a lift 15 is conveyed by conveyance belt 15c towards the topmost part of a lift 15. Since a ball 2 rolls in in ball receiving part 15r one after another by the letter guidance way 75 of an inclination, a ball 2 is conveyed continuously at the topmost part of a lift 15. By remover 15o, the ball 2 conveyed to the topmost part secedes from ball receiving part 15r, and it lets it out to a ball 9. Conveyance of the ball 2 by such lift 15 is repeated until the total of the ball 2 sent in in a ball 9 by both the lifts 15 becomes about ten pieces.

[0205] It lets it pass, whirling so that radii may be drawn in accordance with [since the move direction is suppressed by ball move directional-control board 9b as shown in drawing 11 (A) a ball 2 indicates the perspective diagram of the field X portion of drawing 10 , and a plan to be, respectively when a ball 2 goes into a ball 9, and drawing 11 (B)] the inside of a ball 9, results in 9h of holes, and lets it pass after that, an orbit random from 9h of holes is taken As for the ball 2 which fell, the about 3 - 40 percent is held in the celestial sphere 24 in the propeller-like guidance implement 19. At this time, since the celestial sphere 24 has repeated rocking, churning of the ball 2 held in the celestial sphere 24 is made. A churning operation is raised by the salient 37 prepared in the inside of the celestial sphere 24 at this time.

[0206] If it becomes when conveyance of the ball 2 by the lift 15 ends, one revolution of the celestial sphere 24 will start. Then, only one ball 2 in the ball 2 with which rotation of the celestial sphere 24 was held in the celestial sphere 24 in a certain stage which progressed the grade rolls in into the inner lane 21 (refer to drawing 19 and drawing 22), and all other balls 2 are eliminated from the celestial sphere 24, fall from there, and roll to ***** 13 (refer to drawing 19). And if the celestial sphere 24 rotates further (refer to drawing 20), the ball 2 included in the inner lane 21 will be discharged from the inner lane 21, and will go into the outside lane 18. In accordance with the outside lane 18, the ball 2 included in the outside lane 18 rolls caudad, and goes, and it enters into **** 17w of a reader 17 via the ball inlet 17c1 of a reader 17 from path 18o of the outside lane 18 (refer to drawing 21).

[0207] The ball 2 included in **** 17w stops with the ball path controlling mechanism 43 on the rectilinear-propagation way 17w1. When it is detected by the ball in sensor 49 whether the ball 2 has stopped (S006) and the ball 2 is not contained in the reader 17 with a certain factor, swing (rocking and one revolution) of the celestial sphere 24 and conveyance of the ball 2 by the lift 15 are rerun (S007). And if the ball in sensor 49 detects that a ball 2 is in the rectilinear-propagation way 17w1, the main-control section 100 will perform the directions which operate the ball rolling mechanism 47 with the

ball rolling-mechanism drive motor 71 to the drive circuit 101 (S010). Consequently, a ball 2 begins to rotate with the roller 69 of the ball rolling mechanism 47, and the sense to the reader units 45a and 45b of a ball 2 changes. Then, while the ball number data is read by each reader units 45a and 45b (S012-S015) and the read ball number data is transmitted to each station 5 (S019), it is displayed on display 17b1 (S020).

[0208] If the above performs transmission and a display of ball number data, the main-control section 100 will operate the ball path controlling mechanism 43 with the ball path controlling mechanism drive motor 44 to the drive circuit 101 (S023). Consequently, **** 17w opens and a ball 2 comes to be discharged from the rectilinear-propagation way 17w1 at ***** 13 from either of the fork roads 17w2-17w3.

[0209] The ball 2 which fell from the celestial sphere 24, without showing around to the ball 2 and reader 17 which were not caught by the celestial sphere 24 although the ball 9 let it pass and it fell from 9h of holes, and the ball 2 discharged from the reader 17 all collect on the **** ball section 13. And it passes along the letter guidance way 75 of an inclination formed in the bottom of this **** ball section 13, and goes to ball receiving part 15r of a lift 15. And though the so-called bridge by the ball 2 of this time plurality is generated, since it is flipped by 77s of revolving arms, supply of the ball 2 to a lift 15 does not stop.

[0210] A ball 2 repeats circulation as mentioned above. And the ball 2 of the piece extracted in the middle of the circulation is guided at a reader 17, and the ball number data is read by the reader units 45a and 45b.

[0211] By the way, the ball 2 gathering in ***** 13 has some which not only the non-extracting ball 2 that has rolled directly from the celestial sphere 24 but the extraction ball 2 which has gone via the inner lane 21 and the outside lane 18 has, and have gone via a fork road 17w2 or a fork road 17w3 also among the extraction balls 2. That is, the paths to which a ball 2 results in ***** 13 differ altogether every ball 2. That is, chance originates.

[0212] Furthermore, it can be said that it is which ball 2 goes into ball receiving part 15r of a lift 15 as a result of the further accidental pile since the ball 2 which resulted in ***** 13 is flipped by body of revolution 77.

[0213] It is also in the path of the balls 2 which let it pass and result in 9h of holes, such as a ball which lets it pass linearly with a whorl also in the ball 2 which resulted to the ball 9, and results in 9h of holes, variously, and, in which path is followed, chance acts further again.

[0214] And even if it is the ball 2 included in the celestial sphere 24 of the ball extractor 11, it is exactly accidental which ball 2 is extracted, i.e., random extraction.

[0215] A deer is carried out, with this operation gestalt, ***** 13, the lift 15, and ball 9 containing ****17w and body of revolution 77 will be called first extraction means, and the ball extractor 11 will be called second extraction means.

[0216] (Ball number data-processing stage) If the subcontrol section 150 of each station 9 receives the notice of ball number data from a main part 3 (S319), the same numeric value as the numeric value shown with the ball number data will confirm whether it is indicated in the card table (S320). And when indicated, a hit judging routine is performed (S312). By this hit judging routine, the subcontrol section 150 changes the foreground color of the mass while making status information of the mass the numeric value is indicated to be the state where it was rewritten and chosen (S401) (S402). Next, if this numeric value confirms whether be what is memorized as a reach object and memorized as a reach object, a bingo judging routine will be performed (S404), and if it does not memorize as a reach object, a reach judging routine will be performed (S405).

[0217] In a reach judging routine, all of each lengthwise mass train which constitutes the matrix currently displayed on display 5m, each longitudinal direction mass train,

and each direction of slant mass train are scanned. And it judges whether four hit masses (mass as which the numeric value indicated there is chosen) in the effective mass contained in each mass train (judgment line) are continuing first (S609). This is because it must hit at least and four masses of masses must be continuing, in order to materialize reach, since the minimum numbers of hit mass continuation required since bingo is materialized are five masses like a traditional bingo game in this operation gestalt.

[0218] And while judging with the subcontrol section 150 being in a reach state when the number of continuation is 4 (S611) and memorizing the numeric value of the mass before and behind it as a reach object, the foreground color is changed (S612).

[0219] On the other hand, when the number of continuation is five or more, on condition that the number of effective masses in the mass train (judgment line) has exceeded the number of continuation of the hit mass at the time, the mass before and behind (S610) and its hit mass train is memorized as a reach object (S613, S609, S611, S612). In this operation gestalt, since possibility that a mass would continue per six or more masses arose in connection with having constituted so that an effective field might be expanded, although this could evaluate the victory according to the number of continuation of a five or more mass hit mass, it originates. That is, it is judged as the thing which carried out 6 mass continuation when the numeric value shown with the ball number data received after it when [which once continued five masses in this operation gestalt] it hit and bingo was materialized by the mass train was indicated by the mass next to a this hit mass train and in which was hit and bingo was further materialized by the mass train. Therefore, in this reach judging routine, even if the number of continuation of a hit mass is five or more, the numeric value of the mass before and behind the mass train is memorized as a reach object.

[0220] Also in a bingo judging routine, all of each lengthwise mass train which constitutes the matrix currently displayed on display 5m like a reach judging routine, each longitudinal direction mass train, and each direction of slant mass train are scanned. And it judges whether five or more hit masses in the effective mass contained in each mass train (judgment line) are continuing (S509). And when the number of continuation of a hit mass is five or more, it judges with that in which bingo was materialized, and the value which subtracted 4 from the number of continuation of a hit mass is added to Variable BINGONEW (S512).

[0221] When the scan of all the mass trains (judgment line) in all directions is completed, thus, the subcontrol section 150 The value of BINGONEW [in / the last hit judging routine / for the variable BINGONEW by which addition was carried out to the meantime], That is, as compared with the value of Variable BINGONEW (S516), those difference, i.e., the value of Variable BINGOADD, is added to Variable WIN as the "number of victories" newly generated based on the ball number data received this time (S517).

[0222] The subcontrol section 150 is repeated whenever the numeric value of the new ball number data which were explained above and to which were hit and the judgment routine was notified from the main part 3 is in agreement with the numeric value on a card table. And if the total of the ball number data notified from the main part 3 amounts to ten pieces (S323), on condition that [on condition of Variable WIN being one or more] one bingo is materialized at least, the number which multiplied the number BET of bets and odds ODDS1 by Variable WIN will be added to Variable CREDIT. Moreover, on condition that all the masses set up as a bonus object in this case hit and it has become a mass, a bonus is added to Variable CREDIT (S327).

[0223] By the above, 1 time of the bingo game in each station 5 is completed. A play person performs a bet according to the bet permission instruction transmitted from a main part 3 after that to participate in a bingo game further. A play person does the

depression of pay out button 5a-2 to get down from a bingo game. Then, the value of CREDIT and the coin of the same number which were accumulated by then are discharged from exhaust port 5p (S106).

[0224] Since possibility that bingo will be materialized since it constituted so that the effective field in the matrix displayed on display 6m according to the number of beds might be expanded fluctuates in this operation form as explained above, the play nature which is not in a traditional bingo game and the bingo game equipment which imitated it can be offered.

[0225]

[Operation form 2] As compared with the 1st operation form mentioned above, only the contents of the control program stored in ROM102 of a main part 3 differ, and the 2nd operation form of this invention makes other composition completely common. Therefore, only contents explanation of this control program is given to below, and the explanation about the composition which is common in the 1st operation form is omitted.

[0226] <Processing performed in game equipment 1> drawing 42 and drawing 43 are flow charts which show the contents of the control program in a **** 2 operation form. This control program is characterized by detecting plugging of the ball 2 within **** 17w of a reader 17 based on the detection result of the ball out sensor 51 as compared with the thing of the 1st operation form.

[0227] Processing of drawing 42 is started by supplying a main power supply to the main-control section 100. And in S701 of the beginning, the main-control section 100 initializes various kinds of variables and data which are used for processing execution. Moreover, the main-control section 100 makes the appearance and the celestial-sphere drive motor 31 which are returned to a home position control by outputting a predetermined control signal to the drive circuit 101 in this step, after carrying out one revolution of celestial sphere 24.

[0228] In the following S702, the main-control section 100 transmits a bed permission instruction to each station 5.

[0229] The main-control section 100 makes rocking of the celestial sphere 24 by the celestial-sphere drive motor 31 start by outputting a control signal to the drive circuit 101 in the following S703. In addition, after this instruction, based on the degree information of tilt angle on the celestial sphere 24 inputted from an encoder 35, the main-control section 100 continues surveillance so that the direction of a field (plane of composition) of the field near the rim 24e in celestial-sphere inside 24i may not incline more than a horizontal.

[0230] In the following S704, as for the main-control section 100, only time when a play person is sufficient to perform a bed stands by at each station 5.

[0231] In the following S705, the main-control section 100 transmits a bed restraining order to each station 5.

[0232] The main-control section 100 makes rotation of the revolving arm 771,773 by revolving-arm drive-motor 77a start by outputting a control signal to the drive circuit 101 in the following S706.

[0233] The main-control section 100 makes both [between fixed time] the lifts 15 and 15 drive with both the lift drive motors 16 and 16 to the drive circuit 101 in the following S707 (conveyance belt 15c is rotated to the forward direction). This fixed time is time of a grade when the number of the balls 2 sent out in a ball 9 by both the lifts 15 and 15 becomes a total of ten pieces.

[0234] Next, the main-control section 100 performs loop processing of S708 or S711. This loop processing is processing for discharging the ball 2 which entered in the reader 17 by chance before the celestial sphere 24 made one revolution from a reader 17. This loop processing is started and, as for the main-control section 100, the ball in sensor 49 confirms whether have detected the ball 2 in S708 of the beginning. And when the ball

in sensor 49 has detected the ball 2, the main-control section 100 makes rotation of the ball path controlling mechanism drive motor 44 start by controlling the drive circuit 101 in S709. Subsequently, the main-control section 100 waits for an angle sensor 59 (detector 67) to detect slit 65s of a disk 65 in S710. And when slit 65s is detected, the main-control section 100 stops rotation of the ball path controlling mechanism drive motor 44 in S711, returns processing to S708 after that, and judges again whether the ball in sensor 49 has detected the ball.

[0235] And when it judges with the ball in sensor 49 having not detected the ball 2 in S708, the main-control section 100 performs the directions which the celestial-sphere drive motor 31 is driven [directions] and make the celestial sphere 24 turn to the drive circuit 101 in S712. As a result of performing this step, as it already explained that the celestial sphere 24 made one revolution, only the ball 2 of a piece is introduced in a reader 17 through the inner lane 21 and the outside lane 18. In addition, the drive circuit 101 repeats rocking of the celestial sphere 24 with the celestial-sphere drive motor 31 like it or before, after turning this celestial sphere 24.

[0236] In the following S713, the main-control section 100 confirms whether the ball in sensor 49 has detected the ball 2. This is processing of a sake when introduction of the ball 2 to the reader 17 by making the celestial sphere 24 turn goes wrong. And when the ball in sensor 49 has not detected the ball 2, processing is returned to S707 as that in which introduction of a ball 2 failed.

[0237] On the other hand, when it judges with the ball in sensor 49 having detected the ball 2 in S713, the main-control section 100 directs the rotation start of the ball rolling-mechanism drive motor 71 to the drive circuit 101 in S714.

[0238] In the following S715, the main-control section 100 publishes a lead command to first reader unit 45a.

[0239] And the main-control section 100 confirms whether the ball number data corresponding to the lead command published in S715 were received from first reader unit 45a in the following S716. And when ball number data are received, processing is advanced to S721.

[0240] On the other hand, when it judges with ball number data having been unreceivable in S716, the main-control section 100 publishes a lead command to second reader unit 45b in S717. And in the following S718, the main-control section 100 confirms whether the ball number data corresponding to the lead command published in S717 were received from second reader unit 45b. And when ball number data are received, processing is advanced to S721.

[0241] On the other hand, when it judges with ball number data having been unreceivable with second reader unit 45b, the main-control section 100 confirms whether the celestial sphere 24 has passed the zero in S719. And if the celestial sphere 24 has not yet passed the zero, a control section 100 returns processing to S715, and performs read-out processing of ball number data again.

[0242] On the other hand, as a result of repeating loop processing of S714 or S719, without receiving ball number data, when it judges with the celestial sphere 24 having passed the zero in S719, the main-control section 100 recognizes it as what a certain obstacle produced, and performs ball error processing in S730. In addition, the main-control section 100 displays the message showing the error having occurred on display 17b1 at the time of this ball error processing.

[0243] In S720 performed when ball number data are able to receive from which reader units 45a and 45b, the main-control section 100 directs a rotation halt of the ball rolling-mechanism drive motor 71 to the drive circuit 101.

[0244] In the following S721, the main-control section 100 transmits the ball number data received in S716 or S718 towards all the stations 5. And the main-control section 100 displays the number corresponding to this ball number data on display 17b in the

following S722.

[0245] Next, the main-control section 100 performs loop processing of S723 or S729. This loop processing is processing for discharging the ball 2 in a reader 17. The main-control section 100 makes rotation of the ball path controlling mechanism drive motor 44 start by outputting a predetermined control signal to the drive circuit 101 by S723 of the beginning by starting this loop processing. Then, the main-control section 100 waits for an angle sensor 59 (detector 67) to detect slit 65s of a disk 65 in the following S724. And if slit 65s is detected, the main-control section 100 will stop rotation of the ball path controlling mechanism drive motor 44 to the drive circuit 101 in S725.

[0246] Then, the main-control section 100 carries out fixed time standby in S726. This fixed time is time usually taken for the ball 2 which passed the ball path controlling mechanism 43 to pass through **** 17w. Then, the main-control section 100 confirms whether the ball out sensor 51 detected passage of a ball 2 in S727. And when it judges with the ball out sensor 51 having not detected passage of a ball 2, since the ball 2 has been got blocked within **** 17w, it judges that the game continuation after it is impossible, and processing is advanced to S730, and ball error processing (notice to the employee of error generating) is performed.

[0247] On the other hand, when it judges with the ball out sensor 51 having detected passage of a ball 2 in S727, the main-control section 100 confirms whether the ball in sensor 49 has detected the ball 2 in S728. This is a check for investigating whether two or more balls 2 have entered in the reader 17 for the reasons of chance etc. And when it judges with the ball in sensor 49 having detected the ball 2, the main-control section 100 returns processing to S723, and performs processing which discharges this ball 2.

[0248] On the other hand, when it judges with the ball in sensor 49 having not detected the ball 2 in S728, the main-control section 100 confirms whether the celestial sphere 24 has passed the zero in S729. And when it judges with the celestial sphere 24 having passed the zero, processing is returned to S702. On the other hand, when it judges with the celestial sphere 24 having not passed the zero, the main-control section 100 returns processing to S728, and waits for the celestial sphere 24 to pass a zero.

[0249] <Operation of game equipment 1>, next actual operation in the game equipment by this operation form constituted as mentioned above are explained.

[0250] (Game preparation stage) If a power supply is supplied to game equipment 1, the subcontrol section 150 of each station 5 will perform demonstration execution (S303). And if the play person who looked at the demonstration display on display 5m throws in coin from 5t of coin slots, the subcontrol section 150 will increase Variable CREDIT according to the injection number of sheets of coin (S103). Furthermore, the subcontrol section 150 sets up a bonus while it initializes a card table (S304) and writes a numeric value in the column of each mass in this card table at random in 1-25 (S305) (S306). And based on the card table which performed such a setup, the matrix of vertical 10 mass x width 10 mass is displayed on display 5m (S307). At this time, since it is set as $n=5$, the numeric value is displayed as a mass only with the effective field of vertical 5 mass x width 5 mass. Moreover, an asterisk is displayed on the mass to which the bonus is set.

[0251] On the other hand, if a power supply is supplied to game equipment 1, the main-control section 100 of a main part 3 will transmit a bed permission instruction towards each station 5 (S702). At the station 5 which received this bed permission instruction, on condition that Variable CREDIT is one or more, a bed becomes possible (S206). At this time, a play person depends on self judgment and can choose an one-sheet bed or a five-sheet bed as the bed method (S204, S205, S207). When an one-sheet bed is chosen and a bed button (the D button) is chosen, the mass which adjoins the field of vertical 5 mass x width 5 mass becomes effective [one] (S315), and the numeric value is displayed (S317). On the other hand, when a five-sheet bed is chosen and a bed button (the D button) is chosen, an effective field increases by one

mass in all directions, respectively, becomes effective [the field of vertical 6 mass x width 6 mass] (S312), and the numeric value is displayed (S317). Such a bed is possible until a bed restraining order is transmitted from the main-control section 100 of a main part 3 (S704, S213), and a field is expanded whenever this bed is made. In addition, if a bed is made, Variable BET will also increase according to the number of sheets. That is, it doubles and the number of medals (CREDIT number) repaid when bingo is materialized, while possibility that bingo would be materialized increased, when BET was made also goes.

[0252] Then, if the main-control section 100 of a main part 3 turns a bed restraining order to each station 5 and transmits (S704), the value of BET in each station 5 and the contents of a card table will be decided, and the bingo game in each station will start (S319).

[0253] (Ball number data selection stage) If a game starts, the main-control section 100 of a main part 3 directs rotation of the revolving arm 771,773 by revolving-arm drive-motor 77a to the drive circuit 101 (S706). Consequently, since the ball 2 choked up near the lift in the letter guidance way 75 of an inclination of the **** ball section 13 is put back to the upstream of the letter guidance way 75 of an inclination, a ball 2 comes to roll in in the 1 **** lift 15.

[0254] Next, the main-control section 100 of a main part 3 orders the drive of the lift by both the lift drive motor 16 to the drive circuit 101 (S707). Therefore, the ball 2 included in ball receiving part 15r of a lift 15 is conveyed by conveyance belt 15c towards the topmost part of a lift 15. Since a ball 2 rolls in in ball receiving part 15r one after another by the letter guidance way 75 of an inclination, a ball 2 is conveyed continuously at the topmost part of a lift 15. By remover 15o, the ball 2 conveyed to the topmost part secedes from ball receiving part 15r, and it lets it out to a ball 9. Conveyance of the ball 2 by such lift 15 is repeated until the total of the ball 2 sent in in a ball 9 by both the lifts 15 becomes about ten pieces.

[0255] It lets it pass, whirling so that radii may be drawn in accordance with [since the move direction is suppressed by ball move directional-control board 9b as shown in drawing 11 (A) a ball 2 indicates the perspective diagram of the field X portion of drawing 10 , and a plan to be, respectively when a ball 2 goes into a ball 9, and drawing 11 (B)] the inside of a ball 9, results in 9h of holes, and lets it pass after that, an orbit random from 9h of holes is taken As for the ball 2 which fell, the about 3 - 40 percent is held in the celestial sphere 24 in the propeller-like guidance implement 19. At this time, since the celestial sphere 24 has repeated rocking, churning of the ball 2 held in the celestial sphere 24 is made. A churning operation is raised by the salient 37 prepared in the inside of the celestial sphere 24 at this time.

[0256] If conveyance of the ball 2 by the lift 15 ends, the main-control section 100 will perform discharge of the ball 2 which remains in a reader 17 (S708-S711).

[0257] And if it is checked that there is no ball 2 into a reader 17, the main-control section 100 directs one revolution of the celestial sphere 24 by the celestial-sphere drive motor 31 to the drive circuit 101 (S712). Then, only one ball 2 in the ball 2 with which rotation of the celestial sphere 24 was held in the celestial sphere 24 in a certain stage which progressed the grade rolls in into the inner lane 21 (refer to drawing 19 and drawing 22), and all other balls 2 are eliminated from the celestial sphere 24, fall from there, and roll to ***** 13 (refer to drawing 19). And if the celestial sphere 24 rotates further (refer to drawing 20), the ball 2 included in the inner lane 21 will be discharged from the inner lane 21, and will go into the outside lane 18. In accordance with the outside lane 18, the ball 2 included in the outside lane 18 rolls below, and goes, and it enters into **** 17w of a reader 17 via the ball inlet 17c1 of a reader 17 from path 18o of the outside lane 18 (refer to drawing 21).

[0258] The ball 2 included in **** 17w stops with the ball path controlling mechanism

43 on the rectilinear propagation way 17w1. When it is detected by the ball in sensor 49 whether the ball 2 has stopped (S713) and the ball 2 is not contained in the reader 17 with a certain factor, conveyance of the ball 2 by the lift 15 and one revolution of the celestial sphere 24 are rerun. And if the ball in sensor 49 detects that a ball 2 is in the rectilinear propagation way 17w1, the main control section 100 directs the rotation start of the ball rolling mechanism 47 by the ball rolling mechanism drive motor 71 to the drive circuit 101 (S714). Consequently, a ball 2 begins to rotate with the roller 69 of the ball rolling mechanism 47, and the sense to the reader units 45a and 45b of a ball 2 changes. Then, while the ball number data is read by each reader units 45a and 45b (S715-S718) and the read ball number data is transmitted to each station 5 (S721), it is displayed on display 17b1 (S722).

[0259] If the above performs transmission and a display of ball number data, the main control section 100 will operate the ball path controlling mechanism 43 with the ball path controlling mechanism drive motor 44 to the drive circuit 101 (S723). And since (S726) and a ball 2 will pass through the ball out sensor 51 front while carrying out fixed time progress if it is a normal state, the ball out sensor 51 is judged to have detected passage of a ball 2 (S727). On the other hand, even if it carries out fixed time progress (S726), when the ball out sensor 51 cannot detect passage of a ball 2, because the obstacle produced in (S727) and the ball path controlling mechanism 43, a ball 2 was not able to be sent, or it can be judged that the ball 2 has been got blocked within **** 17w. In such a case, it is impossible to perform operation after it normally. Therefore, an employee is notified of the ball error having arisen (S730), and processing is interrupted.

[0260] Since operation after it by this operation form is the same as the thing of the 1st operation form, it omits the explanation.

[0261]

[Effect of the Invention] Since the probability that will change the size of the effective field in the matrix displayed on the display means according to the amount of the play value by which the bed was carried out, and bingo will be materialized by it can be made to increase as explained above according to this invention, according to a play person's decision and fate, it can pay back in a colorful mode.

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